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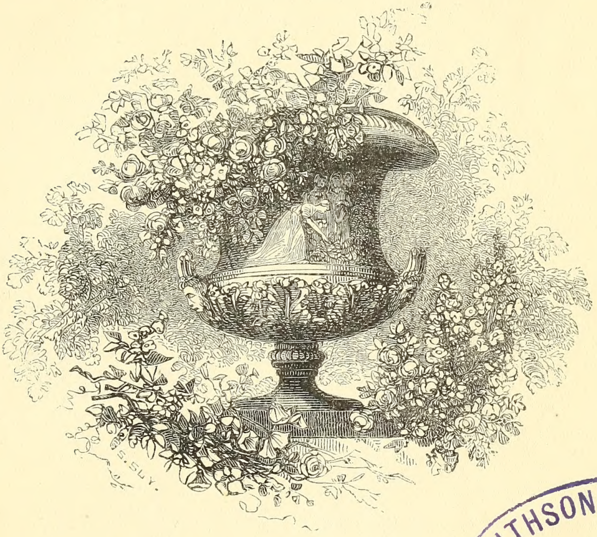
PAXTON'S

MAGAZINE OF BOTANY,

AND

REGISTER OF FLOWERING PLANTS.



" Flowers of all hue."

SMITHSONIAN INSTITUTION
FEB 6 1930
SPECIAL COLLECTIONS

VOLUME THE SEVENTH.

LONDON:
PUBLISHED BY W. S. ORR & CO., PATERNOSTER ROW.

MDCCCXL.

LONDON:
BRADBURY AND EVANS, PRINTERS, WHITEFRIARS.

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TO THE RIGHT HONOURABLE

THE

EARL FITZWILLIAM,

F.R.S. &c. &c.,

THE SEDULOUS AND STEADY SUPPORTER OF ALL THE SCIENCES, AND THE WARM BUT
EQUALLY ENLIGHTENED AND UNVARYING FRIEND OF PRACTICAL
BOTANY AND HORTICULTURE,

This Seventh Volume

OF

THE MAGAZINE OF BOTANY,

IS,

AS A TRIFLING MEMORIAL OF THE ZEAL AND BENEFICENCE WHICH HIS LORDSHIP HAS
EVER EXERTED ON BEHALF OF THE PROFESSION,

WITH HIS LORDSHIP'S COURTEOUS CONSENT,

VERY GRATEFULLY INSCRIBED,

BY

HIS LORDSHIP'S OBEDIENT AND MUCH OBLIGED SERVANT,

JOSEPH PAXTON.

ADVERTISEMENT.

In an annual address to the purchasers and patrons of a popular periodical like the Magazine of Botany, the principal office of the Editor is to point to the accomplishment of past promises, and to register new ones for future fulfilment;—to express gratitude for the encouragement already afforded, and to state on what resources he depends for perpetuating and extending the countenance with which he has been so largely and liberally favoured.

By glancing at the pages of the present volume, the reader will obtain a truer opinion of its value than can here be expressed. The admirers of that most singular, diversified, and lovely tribe—the tropical Orchidaceæ—have had their taste gratified by the very superior figures of new and beautiful species which have appeared in most of the monthly numbers; while the comprehensive remarks on their culture must prove serviceable both to the amateur and gardener. For those whose fancy attaches them to other classes of plants, the greatest possible variety of drawings has been provided; and the lover of really ornamental flowers, who disregards the length of time they have been known, will find many excellent representations of those which rank among the most meritorious.

The letter-press comprises a mass of varied and instructive information on almost every subject that concerns the floriculturist. The gardener who wishes for assistance on such chemical matters as relate to his art, may consult the papers which discuss the composition of soils with advantage. From the series of articles on Succulents, persons who entertain any preference for Cactaceæ and their congeners, may derive many useful facts, and the most conclusive hints on the treatment of the group. The definitions of phrases, the descriptions of organs, and other elementary matter connected with the explication of the natural system, will also aid in facilitating the researches of the botanical student; and of the many detached dissertations each possesses its peculiar interest and importance.

In speaking of the arrangements for the ensuing season, suffice it to say, that it is intended to adopt all available means for maintaining the interest of the publication. The different modes of constructing plant-houses which have resulted from the increased attention that has recently been devoted to the subject, will form a subject for early discussion. The conditions place horticulture on a level with other acknowledged sciences, and its connexion with common chemistry, have further to be explained and enforced in the numbers which more immediately follow; the usual care being still bestowed on whatever other essays may be admitted. Simple and elegant designs for small flower-gardens, such as are usually attached to limited villa-residences, have been prepared, and will be forthwith issued. A considerable number of drawings are also in readiness, the subjects and artistical finish of which are unquestionably better than any which have been heretofore supplied.

In conclusion, the Editor wishes to state his intention of making each future volume, as far as possible, complete in itself, and of avoiding references to preceding volumes. He does this to meet the wishes of those who would willingly subscribe to the work, but for the fear of finding it useless unless in possession of the preceding numbers.

CHATSWORTH,
December 20, 1840.

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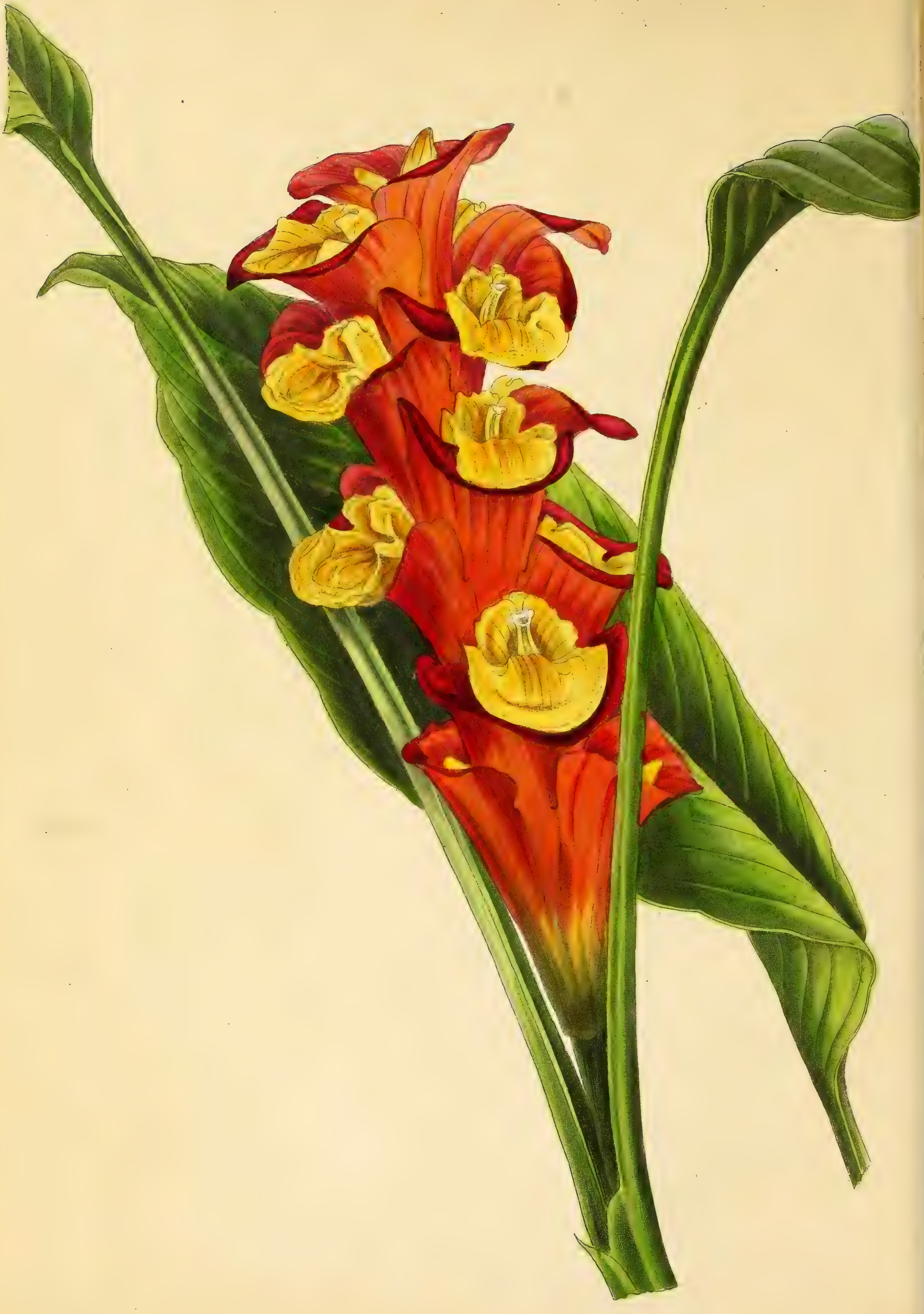

Curcuma Roscöeana

CURCÙMA ROSÇOEÀNA.

(MR. ROSCOE'S TURMERIC.)

CLASS.
MONANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
SCITAMÌNEÆ.

GENERIC CHARACTER.—*Corolla* with a divided limb, each division three-parted. *Anthers* double, two-spurred at the base. *Capsule* two-celled, with numerous arillate seeds. *Embryo* simple, having both albumen and vitellus.

SPECIFIC CHARACTER.—*Plant* a deciduous herbaceous perennial, about a foot in height. *Stems* erect, roundish. *Leaves* with a long channelled petiole, which embraces the stems at its base, broadly ovate, tapering a little at the extremity, acute, with an abundance of distinct veins diverging from the axis in almost a parallel direction, rather wavy at the margins. *Flowers* in an ascending series, enveloped in large, expansive, wavy, obtuse, scarlet sheaths. *Corolla* two-parted ; lower lip largest, roundish, and lying on the surface of the sheath ; upper one nearly erect, slightly concave, and much jagged at the margin : both fugitive, bright yellow.

IT is the notorious defect of plants of this description that either they are too tall and diffuse in their growth, or their flowers too diminutive or inelegant, to entitle them to a place in ordinary collections. Hence, it is only in the stoves of the wealthy, and of those persons who are from peculiar fancy attached to such singular objects, that more than two or three universally-loved species of these tropical reed-like plants are to be found.

But although this observation may apply in most instances, there are, besides those already excepted, others in which it is strikingly negatived, in proof of which, it is our pleasing office to usher into more extended notice the handsome species exhibited in the accompanying plate. No plant is more fit to adorn a stove in which only a select group of exotics are cultivated. Its merits, though more palpably residing in the brilliant tint of the blossoms, and their still richer spathes, are by no means confined to this one characteristic. The dwarfness of its habitude, its noble foliage, the long period through which its floral sheaths remain without withering, and the facility with which it may be preserved and propagated, all aid in establishing its claims to our attachment and culture.

Messrs. Loddiges received plants of this superb species from Dr. Wallich, superintendant of the Honourable East India Company's botanic garden, at Calcutta, in the year 1837. It inhabits different parts of Nepal, and was dedicated by Dr. Wallich, who has the honour of its discovery, to Mr. Roscoe, an able English botanist, and author of a work on the Natural Order of which it is a member. It bloomed most beautifully in the Hackney Nursery during the autumn of 1838, an account of which was recorded in our pages at that period. Since then, Messrs. Rollison, Tooting, have imported it from the same quarter, and our drawing delineates a specimen which blossomed with these gentlemen in August, 1839. From the date just stated till the end of December, the envelopes in which the flowers are encased, and which are the most conspicuous portions of them, retained their colour and texture in undiminished beauty.

Simple as is the management of this truly excellent plant, there is one circumstance which, if disregarded, is calculated materially to lessen its repute. This relates to the degree of solar light necessary to create or elicit its natural colours. Plants kept in a dull or thickly-shaded situation, whatever may be the materials which occasion this shade, flower feebly, and their flower-sheaths assume a pale, dingy, almost colourless appearance, which is so totally distinct from the fine deep scarlet with which Nature paints them, that the species would scarcely be recognised in this condition by an Indian traveller. For soil, a rather rich compost, composed almost entirely of maiden loam and sand, suits it best. It should be potted towards the end of March, with a strict regard to efficient drainage, placed in a moist atmosphere, and copiously supplied with water at the roots till the flower-spike appears. A dry position is indispensable while the flowers and their appendages are unfolded, as they are apt to become mouldy in a very humid air, owing to the lateness of the season during which they are produced. This last feature may here be supplementally mentioned as adding to the plant's value.

No difficulty is experienced in increasing this species, as young suckers are every season thrown up from the roots, and these, if taken off at the time of potting, and planted separately in a smaller pot, soon attain equal strength to the specimen from which they sprung. Caution must be exercised in detaching them, so as to secure a due quantity of roots without damaging the other stems, or those rootlets which may happen to be contiguous.

Curcuma is derived from *kurkum*, the Arabic name, and some of its species yield a pleasant aromatic substance.

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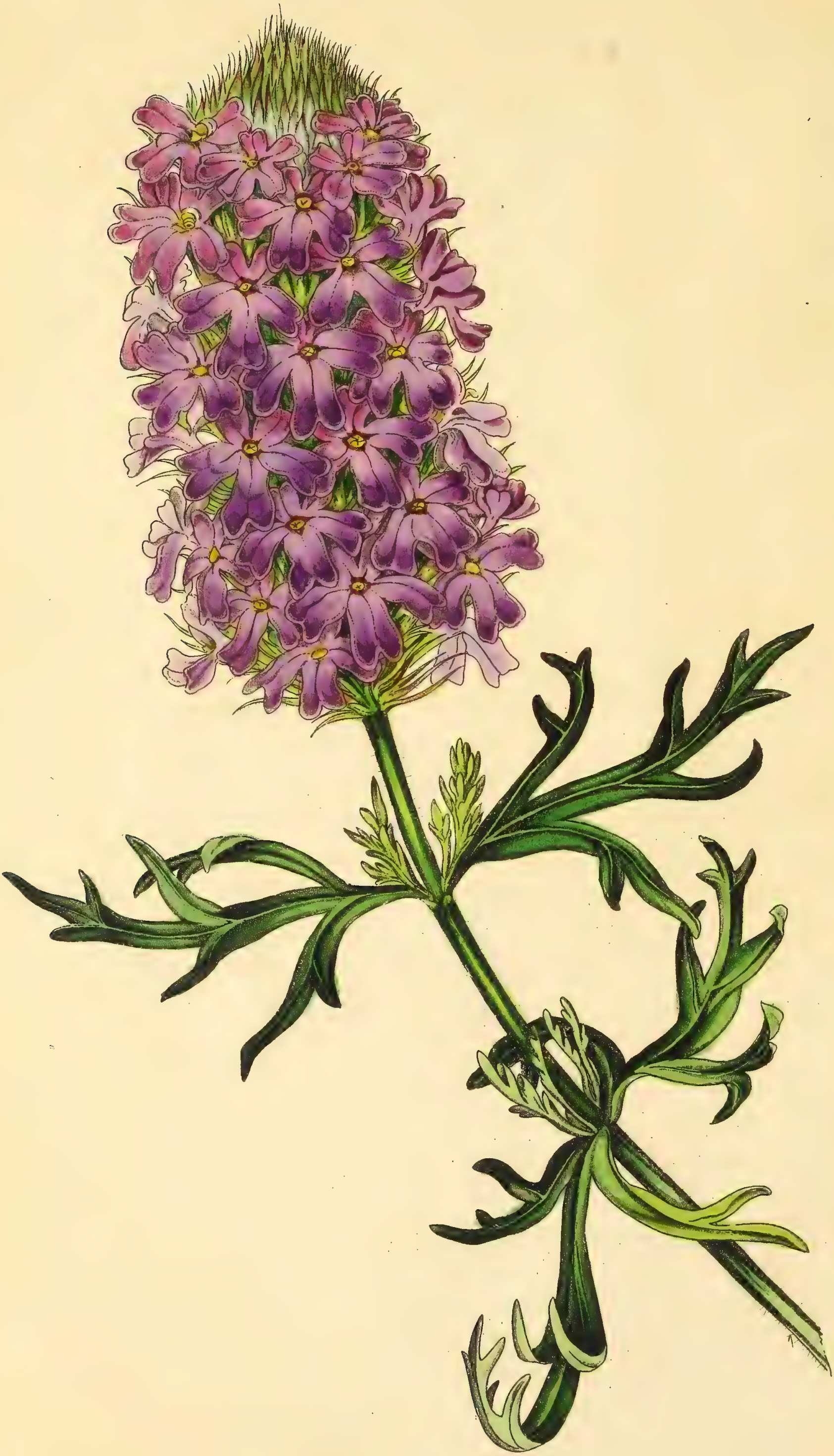


Pl. 1

VERBÈNA AMŒ̀NA.

(PLEASING VERVAIN.)

CLASS.
DIDYNAMIA.

ORDER.
ANGIOSPERMIA.

NATURAL ORDER.
VERBENACEÆ.

GENERIC CHARACTER.—*Vide* vol. i. p. 173.

SPECIFIC CHARACTER.—*Plant* perennial, herbaceous. *Stems* partially recumbent, inclining to a quadrangular form, covered with whitish stiff hairs. *Leaves* stipulate, pinnatifid; lobes oblong, acute, clothed with a closely-pressed pubescence; stipules much more hairy than the blade. *Bracts* numerous, awl-shaped, hairy. *Calyx*—segments similar in form and surface to the bracts. *Flowers* arranged in a long, dense, erect spike. *Corolla* salver-shaped; limb composed of five pretty equal, oblong lobes, which are slightly enlarged towards the ends, bifid, and of a pinkish-purple colour.

BEAUTIFUL as are many of the innumerable hybrid Verbenas now in the market, they are by no means comparable in value to species that are new and of a decidedly distinct character. Our nomenclature is now positively cumbered with names, commemorative only of the individuals who raised them, while the plants, in not a few instances, can scarcely be distinguished.

We venture these remarks, not because we are averse to the practice of hybridization, for we greatly desire its more general adoption; but solely to deprecate the bestowal of a name and a position in the commercial world, on those varieties which have not some strikingly different features from any others, to recommend them to the public. All others we would wish to see cultivated, but confined to a limited circle, and regarded as very trifling variations, not worthy of any distinctive appellation. We know several places in which this plan is judiciously followed, and trust, for the prevention of further confusion, it will be still more regarded in future.

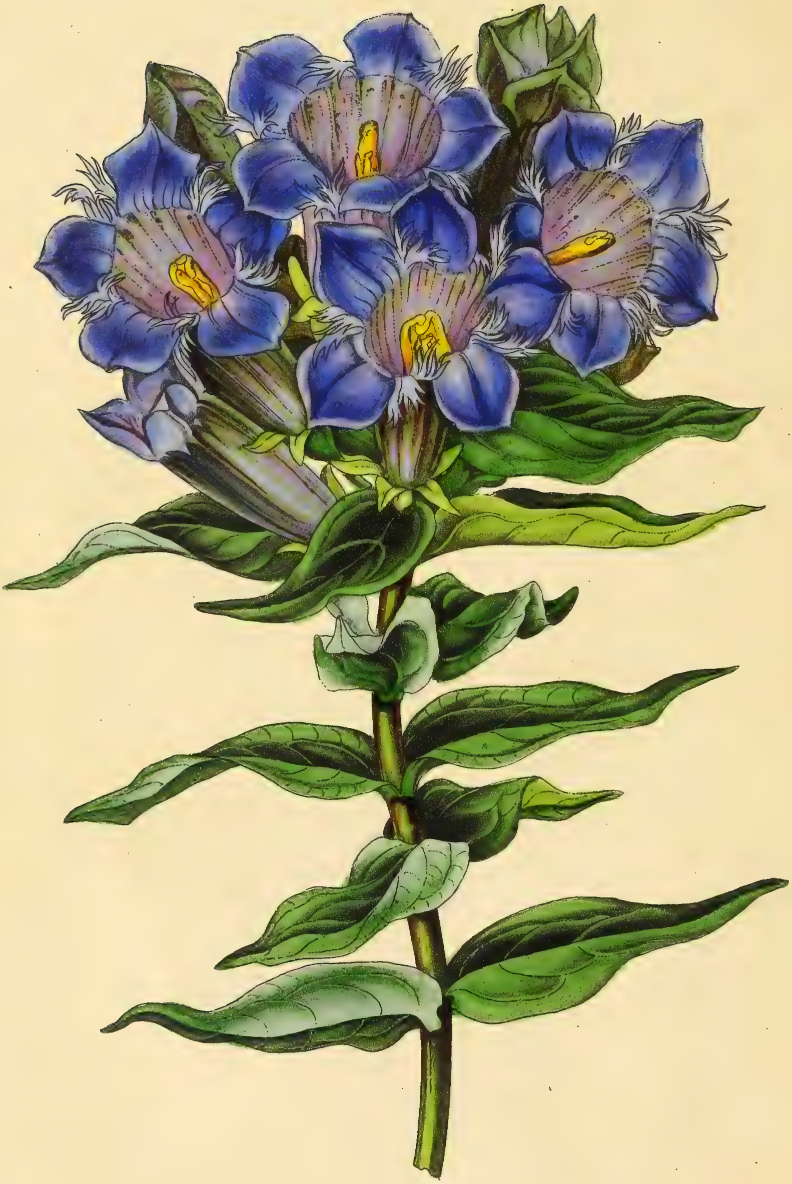
Of the very pretty species herewith published, its appearance is so far removed from that of all others yet introduced, that it is unnecessary to point out its distinguishing traits. The elegantly pinnatifid nature of its foliage is, we believe, quite novel in so large a species, while its long, bold, dense spikes of light purple flowers, stamp it with originality. In this last respect, some resemblance will be apparent between it and *V. teucrioides* (see vol. v. p. 243 of this Magazine); but this is of the slightest order, as the blossoms of *V. teucrioides* are particularly distant compared with the present plant, and it wants those numberless bracts which are here so conspicuous. Indeed, *V. amœna* is altogether more showy and interesting than the species above alluded to, but is destitute of its sweet fragrance.

Of its introduction to England, we have no very authentic information. We saw it first in the garden of the Horticultural Society, and from some plants which were obtained thence by Mr. Edmonds, gardener to His Grace the Duke of Devonshire at Chiswick, our figure was taken in the decline of last autumn. We have every reason to think it a native of Mexico, and it is now in several of the London nurseries.

It is fully as hardy as *V. teucrioides*, or other species, simply requiring a place in a protected frame during winter, and flourishing in the open border through the summer months. On account of its partially trailing disposition, it is well adapted for planting in beds; but the luxuriance of its habits renders the number of flower-spikes it produces rather scanty compared with the dwarfer kinds. To improve this character, it is advisable to cut off the extremities of the shoots at an early period in the season, as the plants will thus be induced to emit more lateral shoots, from each of which flowers may be expected. Detached specimens do not produce a very showy effect, as there is not a sufficient quantity of stems to fill the space occupied, owing to its diffusive tendency; and it has a much better appearance in groups, because the branches can thus become intertangled with each other, and cover the entire surface. From the same cause, it is not calculated for growing in pots.

One of the principal circumstances for which this plant will be prized, is the opportunity it will afford for uniting the rich colours of the species which have their flowers arranged in flat heads, with the lengthy spicate disposition of the blossoms by which it is peculiarly characterized. This must be effected by cross-impregnation, and is an object worthy of the culturist's assiduous attention. Common propagation is performed in the usual manner by cuttings or layers.

The specific designation is that by which this plant is known in the Horticultural Society's Garden, and expresses its particularly interesting aspect.



Gentiana gelida.

GENTIÀNA GÉLIDA.

(ICE-COLD GENTIAN.)

CLASS.
PENTANDRIA.

ORDER.
DIGYNIA.

NATURAL ORDER.
GENTIÀNACEÆ.

GENERIC CHARACTER.—*Calyx* four or five-cleft. *Corolla* funnel-shaped, rarely salver-shaped, with a marked throat; *limb* five-cleft, without any accessary segments. *Stamens* five; *anthers* free, incumbent; *filaments* flattened. *Stigma* two-lobed, usually sessile. *Capsule* one-celled. *Seeds* roundish or oblong.—*Don's Gard. and Botany.*

SPECIFIC CHARACTER.—*Plant* perennial, deciduously herbaceous. *Stems* numerous, erect, round, smooth, from six to nine inches high. *Leaves* opposite, decussate, clasping the stem, ovate-lanceolate, acuminate, glabrous. *Calyx* with five equal, spreading, lanceolate, acuminate segments. *Flowers* collected into clusters at the summits of the stems. *Corolla* funnel-shaped; *lobes* very broadly ovate, acute, with a laciniated appendage on either side the base of each; *limb* pale-blue; *throat* purple, streaked with dark-brown and green; *tube* greenish-brown externally.

THE era is, we trust, not far distant, when Alpine plants will be esteemed and cultivated to the full extent their simple but cheerful beauty deserves. We have latterly marked with joy a movement in their favour by some of the metropolitan nurserymen, which affords a pretty certain indication that the current of popular taste is flowing towards this channel. And we are constrained to regard this proceeding as worthy of the highest praise; not only because it exhibits a public example which is open to the inspection of all, and is therefore likely to be generally followed, but because, by pursuing an enlightened system of treatment, it is shown that plants which are thought by most to require a large amount of attention, can be grown with as little trouble as any tender herbaceous species.

Among the foremost in promoting this laudable impulse, we may mention Messrs. Young, of Epsom. In their nursery a suitable spot has been set apart solely for such a purpose; and it is to their exertions we owe the present opportunity of publishing the beautiful figure herewith furnished. In the prosecution of their efforts, every species which time alone, and not lack of interest, has thrown into comparative oblivion, is sought out and cherished with the most zealous care, while a great number of seeds, which are part of an original collection recently made on the Swiss mountains, have been imported from Mr. J. Warner, of Geneva, Switzerland, and not a few successfully germinated.

Taking a hurried glance at all the genera which may be brought beneath the term "Alpine plants," we find none so intrinsically valuable as *Gentiana.* In this genus is collected a unique and most delightful congeries of the fairest living gems which earth produces. Blue is the prevailing colour of their blossoms, varying, however, from the deepest ultra-marine to the softest azure. To this circumstance we are inclined to attribute much of their pleasing influence, having before remarked that blue-coloured flowers are always favourites; while the present plant cannot fail to be esteemed, for in truth it presents

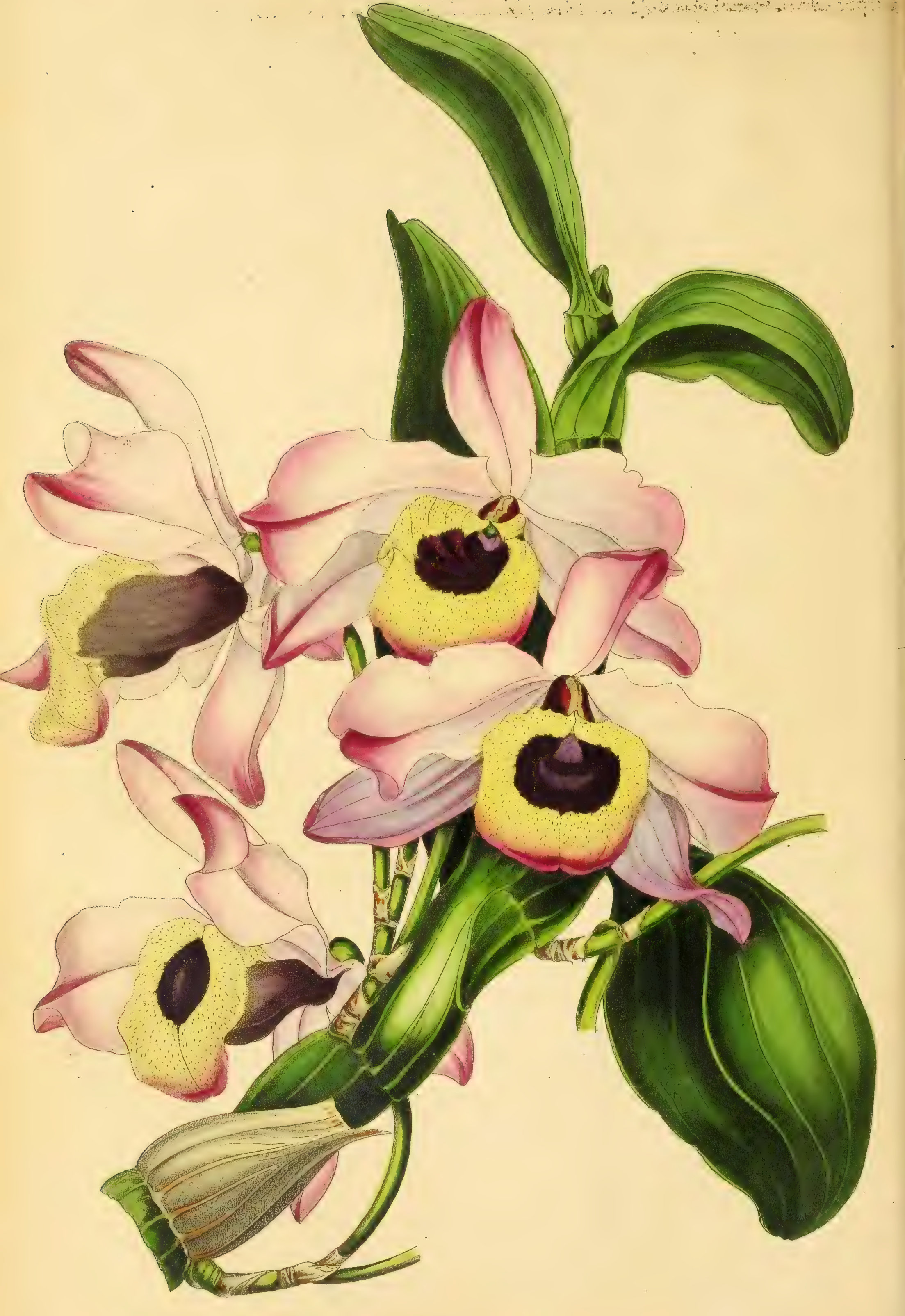
> "An echo of heaven's loveliest tints."

In the species now figured, there is, indeed, more decided beauty than in any other we have yet had an opportunity of witnessing. It were superfluous to enumerate each attractive feature, since it is by their united force that they arrest the imagination, and the very faithful execution of our drawing will completely confirm the praise we have bestowed. It shall suffice to say, that the plant grows to the height of five or six inches, and bears six or more flower-stems, according to its strength, each surmounted by about nine or twelve of its engaging blossoms.

The plan of culture adopted by Messrs. Young is, to choose a sheltered situation, surrounded by evergreen hedges six feet in height, and plant the specimens in slightly raised beds of light soil, covering the earth around each plant with small flatly-round pebbles, resembling, but much less than, those used for fanciful paving. The utility of these stones will be immediately obvious. They prevent the rain or worms from forcing the soil into the axils of the lower leaves, and thus avert that danger from superabundant moisture which, from such causes, so often threatens these plants. The roots are likewise defended from excessive wet or drought by this means, and perhaps partially protected from frost.

The history of our plant is somewhat obscure. It was raised in Britain from Siberian seeds, in 1807, but was most likely lost again long after. Messrs. Young received it from the Glasgow Botanic Garden a few years ago, and it flowers in their nursery in the months of July and August.

Gentius, a king of Illyria, having experienced the medical virtues of the original species, Linnæus commemorated this incident by embodying the name of the monarch in that of the genus. The specific appellation refers to the plant's native locality.



Dendrobium nobile.

DENDRÒBIUM NÒBILE.

(NOBLE DENDROBIUM.)

CLASS.
GYNANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
ORCHIDACEÆ.

Generic Character.—*Vide* vol. iii. p. 77.

Specific Character.—*Plant* epiphytal. *Stems* terete, slightly moniliform, erect, strong, from one to three feet high, sometimes branched. *Leaves* oblong, oblique, obtusely-marginate. *Flowers* in twos or threes; springing from the joints of the year-old stems, opposite to the point whence the leaves have fallen, on long slender pedicels, large, very showy. *Sepals* elliptical; *petals* similar, but larger and rather more wavy at the margin, of a delicate flesh-colour, but darker at the tips. *Labellum* nearly round, cucullate, slightly hairy, yellowish, with a dark purple centre, and a small rim of reddish pink round the extremity.

Perhaps, of all the species of *Dendrobium* yet cultivated in Britain, none is capable of outvying the present plant. In richness and luxuriance of habit, in general elegance and symmetry of form, and above all in the surpassing beauty of its flowers, it stands nearly unequalled. To *D. moniliforme* it is much superior in every respect, although they have several features in common, but to *D. cœrulescens* it bears so strict a resemblance that only the botanist can readily detect a difference. The principal point of distinction is, we believe, in the labellum of the flowers; that of *D. cœrulescens* being acute and more like the lip of *D. moniliforme* in outline, whereas in *D. nobile* it is perceptibly roundish.

Our East Indian possessions, which are now well known to be extremely fertile in *Dendrobia*, boast the parentage of this lovely species. As far as we can ascertain, it was primarily introduced to England by Messrs. Loddiges of Hackney, about the year 1836. So rapid has been its progress in the interval, that these gentlemen possess a magnificent specimen, the dimensions of which may be accurately stated as nearly three feet every way, with probably between thirty and forty fine stems, and yearly increasing. It is altogether the handsomest and most compactly grown orchidaceous plant we have hitherto met with, and in a few more years, if it continue advancing at the present rate, will be a perfect prodigy.

Our drawing was prepared from the particular plant thus described, while its flowers were expanded in the month of November, 1838.

The distinguishing merit of the subject now before us is, that besides its extraordinarily quick growth, and the facility which this furnishes for reproduction, it frequently flowers thrice in one season. No language can so well convey an idea of its splendour at these periods as a reference to the annexed figure, which, as it only represents a small portion of one of the stems, may easily be enlarged by imagination to the size of the entire plant. Even when not in bloom there is something peculiarly refreshing in the lively verdure of its foliage and stems, which is to a great degree wanting in all other Dendrobiums, except *D. cœrulescens.*

With most species of this genus, the observant cultivator will find the course of treatment to be pursued accurately prescribed in their appearance and habits. *D. nobile* is not an exception to the rule. Being a very healthy and exuberant plant, its culture should be proportionately energetic. It may doubtless be kept in a pot with more safety than any allied species, but we greatly prefer the rustic wooden baskets which are now so generally employed, to the most shallow pots that can be manufactured. These baskets might, however, be very readily placed on pedestals or a flat surface, where more tender species occupied the upper portion of the house; so that no objection need be urged against them on that score. Their admirable adaptation for all Epiphytal Orchidaceæ cannot for a moment be disputed.

In keeping this species in a perpetually warm and moist atmosphere, (both which conditions are of course greatly modified in winter,) until it reached the stage at which it has now arrived, the example of Messrs. Loddiges cannot be too highly commended. Having attained a considerable size, it will in future require desiccation during the winter, as the flowers have heretofore been very partially produced, on account of its being in a continuous state of excitation. This can be effected with the greatest ease, and we recommend to all who are anxious to obtain large specimens, the practice of restraining the production of flowers by more constant stimulation than is really necessary, till the plants have acquired the requisite proportions and vigour.

Specimens of this noble plant are flowering beautifully in the Hackney Nursery at the present period. Their blossoms effuse a most refreshing odour, resembling that of prepared cinnamon.

ANALYSIS OF SOILS.

In this day of science, it behoves every gardener to make himself familiarly acquainted with the component parts of the earths which he employs, in order to satisfy his own mind why one kind is heavy and binding, and another light and friable; why some earths bear the title of *loam*, though they differ from one another to a degree which leads to great perplexity, and renders the directions for the preparation of compost soils nearly unavailable.

The term *Analysis* implies a dissection or separation of parts, and, as referring to *soils*, is strictly chemical; for it indicates that their earthy constituents are detected, and forcibly separated by the solvent energy of powerful chemical re-agents. The different kinds and properties of earths have been rather minutely described in the pages of our second volume; therefore it is not our intention to recur to them here, nor do we wish to impose the difficult task of a chemical investigation upon those who perhaps have not time or opportunity to render themselves acquainted with its first principles; but we have lately met with a treatise on the subject of analysis, which is so replete with good sense and candour, that we cannot refrain from taking the liberty to extract from it a few particulars that may induce many readers to peruse the original. It is the prize essay, by the Rev. Mr. Rham Am, commencing at page 46 of the *Journal* of the English Agricultural Society, Part I., to which we allude. The writer candidly avows that he affects not to describe a chemical, a mineralogical analysis, but "a mere examination of the soil which may be sufficient for the purposes of the farmer," and which "can be followed by any man of common information, however deficient in chemical knowledge."

The investigation of the *capacity* of earths for the absorption and retention of water, of their specific gravity when compared with that of pure water, as furnishing a tolerable indication of their fertility; and finally, the separation of the *fine* from the grosser parts, comprise the chief features of the reverend analyst's essay. The following extracts will tend to elucidate his plan.

"A portion of the earth to be analysed, is dried in the sun or near a fire, until it feels quite dry to the hand. It is then reduced to powder by the fingers, or by rolling it on a deal board with a wooden roller, so as to separate the particles, but not to grind them: any small stones above the size of a pea must be taken out. If these form a considerable part of the soil, their proportion must be ascertained by weight; their nature and quantity must be afterwards examined. This, being a very simple operation, and obvious to the sight, need not be described.

"Where the stones and pebbles are evidently accidental, they may be overlooked, as having little influence on the fertility. The dry earths cleared from stones should be accurately weighed, and it is convenient to take some determined quantity of grains, as 1000, 500, or 250, according to the accuracy of the instruments at hand. This portion should be put into a shallow earthen or metal vessel, and heated over the fire or a lamp, for about ten minutes, stirring it with a chip of dry wood: the heat should not be so great as to discolour the wood. It may then be allowed to cool, and be weighed again: the *loss of weight* indicates the water which remained uncombined after the soil appeared quite dry: this is the first thing to be noted."

The power of retaining water is insisted upon with great judgment: a certain quantity of it may be held pertinaciously, without the least appearance of moisture, but this capacity is not the same in all the earthy constituents, the matter of pure clay (alumina) possesses it in the highest degree, that of pure flint (*silex*) in the lowest: hence the rapidity with which sands become parched and arid. Chalk retains water with great energy; and it is from an experimental knowledge of this fact that we are able to account for the verdure which prevails in chalky districts during hot dry summers, when the pastures and grass lands over clays and gravel are scorched by the sun's power.

The substance, which of late years has been called *humus*, is stated to be most retentive of water; it is that residual, decomposable body, which results from the fermentation of the dunghill, and the laboration of the vegetable, fibrous matters in old turf-heaps. It is not *earth*, properly considered as such, nor can we define, accurately, what is its real nature; for *humus* cannot be imitated by the art of man. Correctly speaking, it is a product of the ground; for, although the blackened spit-dung of the mixen contains, or rather is itself the essence of this singular combination of carbon, oxygen, and hydrogen, yet it requires the presence of the earths proper, and the active principle of vegetable life, exerted through the radical organs of the growing plant, to effect the due laboration of manuring substances, and their conversion into perfect *humus*. *Humus*, then, if we rightly appreciate its properties and origin, is the aliment of the vegetable being, convertible into all its common and laborated juices and secretions; but entirely obscure in its nature, and removed from the ken of man's researches, inasmuch as it appears never to be fully formed, until, at the moment of its development, it is taken up by the vegetable absorbent system, wherein it is immediately converted into sap.

(To be continued.)

HINTS ON PRUNING ROSES.

Floriculture, as an art, consists in affording assistance of various kinds to nature, whereby her productions may be accommodated, ameliorated, or increased. The most common methods of effecting this are by modifying the properties of soils, either through the addition or counteraction of nutritive matter. With the advancement, however, of mankind in the different branches of information, some species of plants have been so elevated and refined, and the superior varieties obtained from them are so artificial and precarious, that vigorous pruning has been found necessary to preserve them from degeneracy.

Pruning, as primarily practised, was much more limited in its objects than at present. To procure plants in certain peculiar and admired forms, or to prevent them from extending over too large a superficies, were evidently its sole original ends. As an excitation to the development of flowers, or to fructification, it cannot be considered a primitive art. Indeed, it is remarkable, and furnishes a pleasing proof of the sufficient adaptation of all created things to fulfil unaided their destined proximate purposes, that, in a state of nature, no plant absolutely needs pruning to render it prolific. It is only for those pampered hybrids, which owe their beauty or value chiefly to the ingenuity of man, that any attention of this sort is requisite.

Of the class last alluded to, there are multitudes which do not come within the scope of our work; nor is it our design to embrace all that do belong strictly to Flora's dominions. We have merely selected one of the largest and most ornate groups, to point out a few particulars of which all may not be cognizant; impressed, by the frequent misapprehension of the proper object of this practice, and the consequent vulgar erroneous notions by which it is regulated, with the great importance of rightly understanding such a powerfully influential process. We will only further premise, as a rule which seems to us infallible and of universal application, that, except for any motive of convenience, or in the case of a plant which has been greatly improved by careful cultivation, or where the specimen is growing in a soil which is too highly nutrimental, no genuine species of tree or hardy shrub will be benefited by pruning.

Cultivators are greatly divided in opinion concerning the period at which roses should be pruned, many advocating the dismissal of this operation in the decline of the autumn, or about the months of November and December, while a minority incline to the belief that spring is the proper season. It would be useless to state the arguments of each of these parties in support of their favourite tenet, since we take leave to differ from both, and shall briefly justify our conclusion. At eithe of these periods, but especially the latter, the sap of plants must be presumed to be in constant circulation, although no external indications of this may be apparent.

Therefore, if the shoots were wounded, there would be a weakening flow of fluids from the part exposed. Now, if these shrubs are dressed in the present month, the frosts of January will have in a great measure paralysed the exertion of any vital energy, and there will be scarcely any unnecessary exhaustion occasioned. We particularly deprecate the practice of pruning in spring, as the sap is then always drawn towards the extremities of the branches, and when these are taken off, the lower buds are found deplorably enervated. And though it is asserted that roses pruned in winter often have their cut shoots destroyed by frost, we have never seen those of the hard-wooded kinds injured below the nearest bud.

So far as the employment of the knife is concerned, roses may be separated into six classes. We shall very cursorily notice each of these. By far the largest division is that which includes the innumerable varieties of *R. Gallica.* Any neglect in pruning these, though only for a single year, is attended with the worst consequences;—a sad deterioration in the figure and perfectness of the flowers, and a general inferiority in the wood subsequently produced. These roses must be carefully as well as closely pruned, from the very commencement of their existence. Whether propagated by suckers or layers, (the latter of which are to be preferred, because the check caused by layering helps to induce a free-flowering state,) the first shoots should be decollated to within six, nine, or twelve, inches of the ground, and all the succeeding suckers annually reduced to the same height. This is an established principle, and ought not to be departed from; for nothing diminishes the beauty of dwarf roses more than tall rambling stems. In every following year, a still more rigorous system must be pursued. Each new shoot should be shortened to about three inches, always bisecting it immediately above a bud. After one bush has bloomed three or four successive summers, and the original stems are becoming old, a stock of young plants should be provided from layers, and the old specimens destroyed. We recommend this practice both because roses speedily exhaust the soil, and require removing periodically, and likewise on account of their disposition to spread too widely, to which we may add the decided inferiority of the flowers borne by suckers. It is the only way of retaining any sort in its pristine loveliness.

We will next advert to standard roses, which are confessedly among the greatest attractions of a garden, if properly pruned. The common custom is to trim them yet more closely than dwarfs; every shoot being yearly cut away to the lowest two or three buds. A round dense head is thus maintained, though, in our judgment, at the expense of all real beauty. They assimilate too much in appearance to the old evergreens of former centuries, the disfigurement of which has now most justly fallen into desuetude. In short, they are too formal, rigid, and unnatural.

In the nursery of Messrs. Young, Epsom, we first saw an attempt to alter the old mode, and impart to standard roses that air of gracefulness which is so desirable an accompaniment of the superlative and proverbial beauty of their blossoms. It succeeded most perfectly; and any one who visits their nursery while the roses are in flower, will be struck with the superiority of plants of this description to those pruned according to the usual method. The following are its leading features.

After a stock is budded, and the newly inserted buds have completed their first year's growth, it is pruned in the customary manner; the same course is pursued for one or more years afterwards, till a sufficient number of branches are obtained to constitute a symmetrical head. When this preliminary stage is reached, only the points of the shoots are removed, and the remaining buds are all allowed to develop themselves. The only attention of this nature which the trees will subsequently need, is the occasional extraction of any redundant shoots, or the shortening of very exuberant ones. By the weight of the flowers and the lateral sprigs, the lower branches will soon assume a downward direction, and thus a fine drooping tree, with all the elegance of nature, under the restraint of artificial culture, will be readily procured. It should be remarked, however, that the very strong-growing varieties are not well adapted for this purpose.

Climbing roses, whether they be best fitted for attaching to poles or training against walls, are nearly alike in their habits. Flowering, for the most part, from the ends of their shoots, it is obviously improper to shorten these. A simple thinning when they are too abundant, and a provident provision of healthy young stems to supplant the old ones after they have ceased to flower vigorously, will be quite sufficient to secure every desired advantage. Those of the shrubby sorts that are treated in this way, may be pruned as their more humble congeners, except that the principal stems, and such laterals as are required to fill any vacant intervals, must not be stopped after the lower part of the wall or trellis is duly covered.

China and Damask roses, with their manifold hybrid and seedling varieties, may be appropriately placed in juxtaposition with regard to pruning. To grow and flower these successfully, the knife must be very sparingly used. Their shoots are so particularly tender, and the amputation of these exposes such a large surface of unprotected pith, that they sometimes die the winter they are pruned, and the operation always facilitates their decay. It is merely useful to cut out the older stems as they assume a brownish-yellow appearance, not to suffer the others to grow too thickly, and give those that make very rapid progress the first season a trifling check by decapitating them. It is from the extremities of these, as well as of the climbing species, that the blossoms appear, which alone is enough to guide the culturist in the pruning process.

It now remains that we lightly consider Scotch roses and sweet-briars, (*R. spinosissima* and *R. rubiginosa*,) with their varieties, the former of which are eminently worthy of regard. If the decaying wood is annually cleared out, and the largest suckers shortened, nothing more will be needed, either of pruning or any other procedure. Like the two preceding tribes, they flower in terminal clusters, while they are more easily cultivated than any of their allies. We lately visited a suburban villa, where a collection of Scotch roses was planted in a bed of the flower-garden. They were completely environed on all sides with the *Mimulus moschatus*, which, though at first sparingly scattered throughout the bed, had extended over every inch of its surface, and, in the summer, was fully one foot high, presenting a continuous sheet of yellow blossoms. The soil of the bed is yearly dug over, but the *Mimulus* receives no detriment from being thus rudely disturbed, and, as the roses are not materially injured by this plant, no efforts are made to promote its destruction. When it and the roses are blooming at the same time, a most enchanting effect is produced.

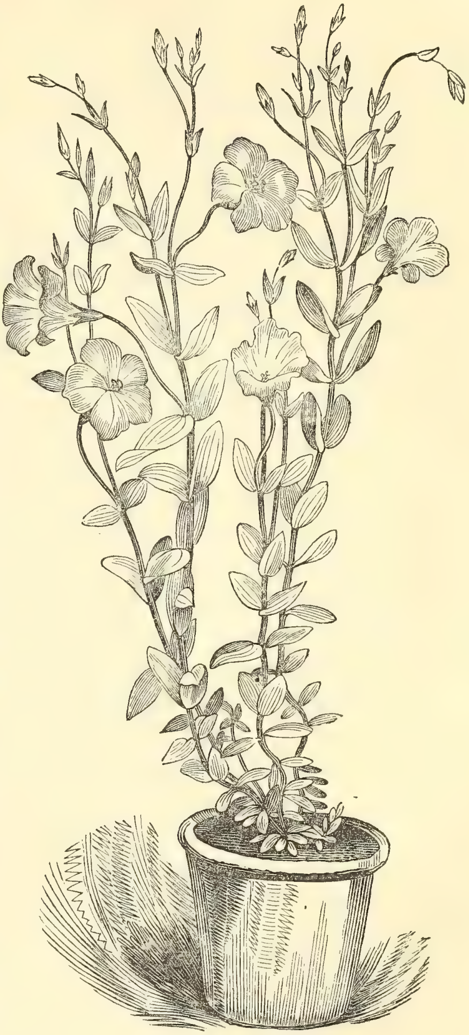
PECULIARITIES IN THE CULTURE OF NEW AND BEAUTIFUL PLANTS.

Lisiánthus Russelliànus. When our coloured figure of this splendid plant was published, (see Vol. VI., p. 31,) want of space prevented us from appending an engraving, by which those who are not familiar with the plant might be enabled to form some idea of its mode of growth. Having subsequently assured ourselves, by frequent examination of many specimens growing in the metropolitan collections, on several points in its character and cultivation which were then involved in considerable incertitude, we now place before our readers the result of these investigations, and likewise give insertion to a woodcut representing the general outline of the species.

The first circumstance to which we shall call attention, on account of its being one of primary importance, is that, so far as our inquiries have reached, this plant will not succeed in a house of a temperature below that of the stove. The opinion, therefore, which was originally entertained respecting the probability of its proving nearly hardy, is quite baseless. We must be understood, however, as referring solely to the attainment of perfection by its flowers; for the plant will certainly thrive in the open ground through the summer, but it will not flower in this situation; or it will occasionally even produce flowers in the greenhouse, though of a very inferior description. As, then, the production of the finest floral display must necessarily be the object of the culturist, a perfect knowledge of the best means of obtaining this is obviously to be desired, and we are now enabled to state that, for the present subject, the temperature of a stove is paramount and indispensable.

Great doubts have long existed relative to the duration of this species; some having considered it merely annual, while others—among whom we reckon ourselves, as may be seen by consulting the reference above given—have supposed it a true perennial. From more than one case recently presented to our notice, we can now decidedly confirm the latter supposition. Indeed, it appears to be of rather a sub-shrubby nature; for, although the stems invariably decay when all the flowers have faded, they emit a number of young shoots from those portions of their base which are above the surface of the soil, and where leaves once existed; while the shoots of herbaceous plants always proceed from the collar or neck which is in immediate connexion with the roots. The establishment of this fact undoubtedly increases the value of the species, and must at once remove that disagreeable dubiety on this head which has hitherto deterred so many from purchasing the plant.

For the further dissipation of any prejudicial impression that may have arisen to the impediment of the much more extended distribution of this really superb species, we can aver that every difficulty which has yet attended its propagation is completely obviated; since it is found to ripen large quantities of seeds when managed as a stove plant; and these, if sown as soon as matured, in a genial hot-bed, will produce specimens from which flowers are sometimes developed in the ensuing year, but infallibly in the second autumn from the time of sowing.



Lisiánthus Russelliànus.

Respecting the actual treatment of the plant here under discussion, we have yet a few hints to record, which may assist some of those by whom these pages are perused. It delights, during the summer season, in a warm situation, a rather moist atmosphere, and a slight degree of shade procured by vicinity to some plants or objects, or a position in a house with a north-western aspect, by which it can be screened from the stronger solar beams; but in the winter, all these conditions must be reversed, since it is particularly susceptive of damage from moisture, and cannot endure winter stimulation.

We have seen various modes of training adopted, but none appears so suitable as the natural one, which is simply to support the principal stem or stems with distinct erect stakes, and allow the lateral shoots to extend themselves in any direction to which they may incline. If these last are very numerous, their tendency to erectness frequently renders them too dense to exhibit the flowers in a proper manner; and, in this case, stakes can be placed at sufficient distances around the stems, and the exterior branches fastened to them in the same position as those in the centre, thus merely making the head more expansive. This is decidedly preferable to any other method of diffusing and adjusting them.

The practice of propagation by cuttings cannot be much resorted to by those who wish their plants to flower, notwithstanding the speedier fertility of the offspring thus obtained. Nevertheless, it is well worthy of remembrance that those specimens which are decapitated in the summer of their first year's growth, bloom with more certainty and in immeasurably greater abundance than such as are left to nature. So striking is the difference between plants treated according to these different modes, that while a person who had witnessed a subject of the former would retain a vivid impress of its splendour on his mind for an indefinite period, those of the latter might be passed almost unheeded, owing to the paucity of their blossoms. With these advantages, and the additional entail of two, three, or more cuttings from the shoot thus reared, together with many others—too weak to bear flowers—which may be taken from the plant in a subsequent stage, and which would not otherwise be protruded, it is easy to determine which system possesses the most cogent recommendations.

With a mournful pleasure we subjoin Sir W. J. Hooker's account of the origin of the specific name, as given in the Botanical Magazine. It affords one, among many illustrations, of the opportune benevolence in which the late distinguished nobleman, whom it commemorates, especially delighted.

"It was shortly before the period of the arrival of the seeds and specimens of this plant, that His Grace the Duke of Bedford, with his wonted liberality, contributed a sum of money, which, had the receiver (Mr. Drummond) continued in health, would have materially assisted in forwarding his views in Florida, but which was no less available in a period of pain and sickness immediately preceding his lamented death; and I am sure that in dedicating this splendid plant to so distinguished a patron of science, I shall have the approbation of every botanist and every lover of horticulture."

Æschynánthus ramosíssimus. All who possess this beautiful object will be gratified to learn, that so far from being, as usually considered, an extremely shy bloomer, it is one of the most abundant flowering plants within our knowledge. The only apparent reason why it has not blossomed freely in those collections wherein it has for some time past been grown, is, that cultivators had not discovered the most congenial mode of management. As very few are even now enlightened on this point, we shall briefly relate the treatment bestowed by Messrs. Rollison, Tooting, and its result.

In the spring of 1839, when all danger from frost had ceased, a great number of plants of this species, varying in height from six inches to a foot, were placed, for convenience, in a common frame. They were retained in this situation throughout the summer, being liberally supplied with water and air, and sometimes completely exposed. About the month of November, they were removed to a stove in which a temperature of 60 or more degrees, Fahrenheit, is generally maintained, and at the present time every specimen, thus dealt with, is exhibiting large bunches of flower-buds at the extremity of each shoot. Even the smallest plants, which have not yet been shifted out of the pots in which they were originally planted from the propagation-house, appear to be equally as prolific of flowers as those of more mature growth.

We are happy thus to see our expectations (as expressed in vol. vi. p. 196) respecting the propriety of partially exposing this plant to the sun, so thoroughly verified. No perceptible injury—not so much as the discoloration of the leaves—attends the plant while passing through this ordeal; and a full knowledge of the facts here communicated, will, we are persuaded, assist more in rendering it popular, than any recapitulation of its merits in which we might indulge. The consequence which followed the process of exposure in the present instance, is likewise of great importance as an evidence of the general good effects which would result from this system, if more extensively practised with plants that rarely develop their flowers. Only one precautionary circumstance should be borne in mind when adopting it; which is, that all other plants have not such vigorous or hardy foliage as *Æschynanthus*, and therefore require to be more gradually accustomed to direct solar influence. There can be little doubt that the still more splendid *Æ. grandiflorus* would, if subjected to the same regimen, receive a similarly potent stimulus.

FLORICULTURAL NOTICES.

NEW AND RARE PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR DECEMBER AND JANUARY.

Cèreus martiànus. The lovers of the beautiful in the Cactaceous tribe, cannot cultivate a plant more suited to their taste than the present; although, we believe, it does not flower freely until of a certain age. In the rich collection of succulents at Woburn, it blossomed in April, 1839. It is nearly allied to *C. flagelliformis*, but has larger and erect stems, like those of *C. serpentinus*. The fine crimson-coloured blossoms have a long tube, and acuminate segments: they are large and particularly handsome. The chief differences between this species and *C. flagelliformis*, besides that above-mentioned, are its more deeply furrowed stems, and slenderer as well as much more distant aculei. It is a native of Mexico, and flowers very copiously in the spring months. *Bot. Mag.* 3768.

Deùtzia corymbòsa. A notice of this species appeared in our last volume, under the name of *D. canescens*, by which appellation it is yet known in some nurseries. It is found in several parts of the East Indies, but in either northern or very elevated districts, and appears to thrive perfectly well in our borders or shrubberies, flowering in the month of June. From its large clusters of delicate blossoms, their delicious scent, and the somewhat dwarf habits of the plant, it is recommended as a fit subject for forcing, to which it submits as readily as Persian Lilacs. Japan also seems to yield this species, as it was discovered there by Dr. Siebold, and specimens received from this gentleman by Messrs. Low and Co., Clapton, were the first presented to the Horticultural Society. *Bot. Reg.* 5.

Diplopéltis Hugèlii. An interesting Swan River plant, inhabiting, according to Baron Hugel, the country around the town of Freemantle. Seeds were obtained by Mr. Toward, gardener to Her Royal Highness the Duchess of Gloucester. It is a greenhouse shrub, with deeply-indented, sometimes pinnatifid foliage, and numerous terminal panicles of lively pink flowers. Cuttings of the young wood will strike, if tended in the usual manner; and the species will succeed in the open border, during the warmer part of our summers. Dr. Lindley conceives that additional interest attaches to it on account of the doubtfulness which has existed regarding its natural affinities, since it has been thought to connect the Orders *Sapindaceæ* and *Capparidaceæ*, by not being distinctly referrible to either. It is at length assigned to the latter, but its physiological structure is exceedingly curious. *Bot. Reg.* 69.

Epidéndrum cepifórme. Very large, smooth, roundish, onion-shaped pseudo-bulbs, both bigger and more globular than those of *E. oncidioides*, (its nearest relation,) characterize this showy new species. J. Parkinson, Esq., H. B. M. Consul at Mexico, sent plants of it to Woburn Abbey in May, 1838, and it has since flowered in that princely establishment. The panicles of flowers are fully three feet high, and bear a considerable number of spreading branches: the blossoms are very abundant, with sepals and petals of a tawny orange colour, and a pale yellowish-green labellum, which is streaked with red. It is, on the whole, a rather valuable species, and will be a welcome addition to the genus. *Bot. Mag.* 3765.

Epidéndrum glumàceum. We first saw this pretty plant in flower at Messrs. Rollisons', Tooting, in the month of April, 1839, and it was imported by these gentlemen from Brazil. It has short, rigid, ovate pseudo-bulbs, a rhizoma which is apparent above the soil, very stiff, partially obtuse leaves, and a peculiarly strong erect floral raceme. This last issues from the summit of the pseudo-bulbs, and is surrounded at its base by "long, withered, sharp-pointed, ribbed scales, resembling the *glumes* of grasses," from whence it takes its specific name. The exterior surface of the flowers is purplish while young, but, when expanded, the whole of their interior is white, streaked with pink, except the column, which is green and purple. It is cultivated like most of the Epidendra of its class. *Bot. Reg.* 6.

Ìris fràgrans. Northern India has furnished our gardens with this desirable herbaceous plant, seeds of it having been procured by Dr. Royle, and presented to the Horticultural Society, in whose gardens it has been raised and flowered. The leaves and blossoms are, in a great degreee, of the common character and colour; the former being narrow, ensiform, and glaucescent, the latter principally purplish blue and yellow. Clusters of two, three, or more flowers, (which are slightly larger than those of the well known *I. sibirica*,) surmount each of the stems, and as they yield an agreeable fragrance, the species is worthy of general culture. It proves to be perfectly hardy, since some specimens remained exposed without injury in the Horticultural Society's Gardens, during the winter of 1837-8. A rich loamy soil is the most suitable, and divisions of the old stock soon form excellent plants. *Bot. Reg.* 1.

LASIÁNDRA PETIOLÀTA. From the Berlin Botanic Garden, this splendid plant was received at the Botanic Garden, Edinburgh, in 1836, under the name here given; but Sir W. J. Hooker supposes it to be the *L. maximiliana* of Martius, and a native of Brazil. It is an extremely handsome stove shrub, growing about five feet high, with weak branches, and strongly nerved, very hairy leaves, the hairs of which ultimately assume a fulvous hue. The flowers are deep blue, large, and highly ornamental, while the conspicuous bunch of white stamens in their centres, with the long tortuous filaments, have a very singular appearance. The species blooms most profusely in a moist stove through the months of June and July, requiring the same treatment as the genus *Melastoma*, and being easily multiplied by cuttings. *Bot. Mag.* 3766.

PASSIFLÒRA MOOREÀNA. Mr. Tweedie, of Buenos Ayres, discovered this perfectly distinct Passion-flower in different tracts of the interior of that country, and transmitted seeds to Britain in 1837. From some of these, which were germinated in the Botanic Garden at Glasnevin, Dublin, plants were successfully flowered by Mr. Dugald Moore, after whom it is named. It is related to *P. Tucumanensis* and *P. cœrulea;* to the latter of which it is likewise supposed to assimilate in hardihood, being presumed capable of enduring the open air in our own clime. The stems are somewhat vigorous, apparently angular, and furnished with curling tendrils. The leaves are almost sessile, deeply divided into three long segments, and serrated all round their margin. The colours of the flowers are nearly akin to those of *P. cœrulea. Bot. Mag.* 3773.

PENTLÁNDIA MINIÀTA; *vars.* LACUNÒSA *et* SULIVÁNICA. Two exceedingly pretty bulbous plants, with bright red flowers, and differing but very slightly; the former having small glands on the outside of the tube of the perianth, and the other being destitute of them. The genus is established by the Hon. and Rev. W. Herbert, in honour of J. Pentland, Esq., Consul General at Peru, by whom the variety *lacunosa* was obtained at Quispicancha, near Cusco, in Peru, and sent to this country. It has flowered in the collection at Spofforth, and we have also seen it in bloom at Mr. Knight's, Chelsea, where it is called the Red Narcissus. The native country of the last variety is uncertain, it having been introduced to Britain by Commodore Sullivan, from some unspecified western district of South America.

The leaves of both are few and uninteresting, and the flower-scapes about nine inches high, having from four to six beautiful pendulous blossoms at their extremities. *Bot. Reg.* 68.

Sóllya lineàris. We believe we are correct in stating that this is the plant known in nurseries under the appellation of *S. salicifolia.* "It resembles the other species in general appearance, and altogether in the colour and size of its flowers, but it has exceedingly narrow leaves, which have no appearance of ever being serrated, and it is altogether a more slender-looking plant." From the universally admired *S. heterophylla*, it is further distinguished by the deeper blue of its blossoms, and there are also some minute features in its stigma and fruit peculiar to itself. It was introduced to Britain from the Swan River Colony, through Mr. Drummond and others, and blossomed with R. Mangles, Esq., as well as in several metropolitan gardens. Either trained to a pillar, or treated as a dwarf bush, it is a charming greenhouse plant, but will bear planting in the open ground, in sheltered situations. We may here mention that a plant in a private garden near London, survived the winter of 1837-8 without any protection, the main shoots only being destroyed to within a short distance of their base. *Bot. Reg.* 3.

NEW, RARE, AND INTERESTING PLANTS IN FLOWER IN THE PRINCIPAL SUBURBAN NURSERIES.

Corrœa longiflòra. This is one of the beautiful hybrids which have latterly been so profusely raised by different individuals. In the great length of its flowers, and their delicate rose-colour, which is wholly untinctured with any other hue, it stands perfectly isolated. The leaves are ovate, obtuse, and, as well as the exterior of the flowers, covered with a slight ferruginous down on the upper surface. In the nursery of Mr. Low, Clapton, a small specimen is now flowering; but we have been favoured with an excellent drawing from Messrs. Lucombe and Pierce, Exeter, which will shortly be published.

Dendròbium aúreum; *var.* pállidum. A fine plant of this lovely variety is blooming, in great vigour, with Messrs. Loddiges, Hackney, at the present time. Its stems are partially drooping, and bear a considerable number of dingy white flowers, the outer portions of which approach to a sulphur colour, while the labellum is deep yellow, striped with orange red. It is remarkable for the very refreshing fragrance of its blossoms, especially in the evening. Attaching it to a block of wood, or placing it in a small wooden basket, is the most appropriate method of culture, and it must in either case be suspended from the roof of the house.

Epidéndrum skínneri. One of the rarest of Orchidaceæ, and at the same time one that is generally thought extremely difficult to manage. It produces a large erect spike of pretty pink blossoms, from the summit of each of its newly-formed stems, in the month of November; these often remaining expanded for two months. Specimens at Messrs. Loddiges' and Messrs. Rollisons', which have only just shed their flowers, first opened these in the end of October. The only successful way of growing this plant is to place it in an open wooden basket, filled with sphagnum, and hang it to the rafters of the roof. With such treatment, it flourishes most luxuriantly, provided it be not too much excited in the winter; whereas, if planted in a pot, or in soil of any description, it can barely be preserved alive.

GARDÈNIA ROTHMÁNNIA. Every person admires the fine green foliage, and the large, white, odorous flowers of *Gardenia radicans*; but the species here under consideration, though a very old plant, is scarcely anywhere seen, notwithstanding its greater showiness. It is a dwarf, bushy shrub, excellently fitted for placing on stages, or other prominent positions, with rich evergreen leaves, and expansive cream-coloured blossoms, which are charmingly spotted with brown. It bloomed, a few weeks since, in the establishment of Messrs. Rollison, Tooting. Like *G. radicans*, it luxuriates most in the hot-moist atmosphere of a stove; for, although a native of the Cape of Good Hope, the air of a greenhouse is too arid for its moisture-loving disposition. Perhaps a moderate hot-bed, or a place in a close stove, where it can be plunged in a fermenting material, such as bark, will be found most congenial for both it and its fellows, since a gentle humidity is best preserved by this means. Its value is not in the least decreased by the long period it has been grown in Britain; for, even with regard to rarity, it is now almost unknown in the majority of gardens.

HÒYA CORIÀCEA. It will be very long before this is so general a favourite as the charming *H. carnosa.* Not that it is wanting in the beauty which renders that species so much admired, for it possesses some characters which we consider decidedly more ornamental than its older ally can boast; but the tardiness with which it can be multiplied is so great, that many years must elapse ere it can be freely dispersed. Messrs. Loddiges, in whose collection alone it at present exists, have not yet succeeded in obtaining scarcely any offspring. Still it is in admirable health, and exhibits great promise of a speedy and liberal increase. Flowers have been most abundantly produced during the last two months, and there are several clusters now unclosing. It is a decidedly shrubby species, without any apparent tendency to climb; and by its dwarfness, together with the great size and lively verdure of its leaves, is, we think, superior to *H. carnosa.* It has been placed by these gentlemen in a pot of light soil, having been imported on a large log of wood. The decayed portions of this latter and leaf-mould seem highly favourable to its growth, the roots having spread amongst them with great rapidity. Into another and larger pot which surrounds the one containing the plant, some soil has been introduced, and a few layers are now fast forming independent roots, so that the lovers of novelties will soon be able to obtain it. The blossoms are borne in corymbose clusters at the points of the shoots, being white, tinged with yellow in the centre, and very beautiful. It requires the temperature of a stove.

JASMÌNUM MULTIFLÒRUM. An elegant species of Jasmine, bearing the name hereto prefixed, may now be seen in a flowering condition in the stove of Mr. Knight, King's Road, Chelsea. We were much gratified with its low habit, the height of the specimen we are remarking on not being more than two feet, and yet surmounted by a copious bunch of pure white blossoms, arranged in a corymb. It has opposite ovate leaves, of a moderate and well-proportioned size, and the flowers exhale a highly grateful perfume. It is treated as a climbing plant, but, if the main shoot were removed to about a foot from its base, it would doubtless throw out a sufficient quantity of laterals to form a very agreeable bush.

MIRBÈLIA GRANDIFLÒRA. While such numbers of new greenhouse plants are perpetually being received, it is manifestly necessary that some line of distinction should be drawn between those worthy of culture, and such as are comparatively worthless. Wherever beauty is esteemed as a guide in this discrimination, or any of the yellow-and-brown flowering leguminous tribes are prized, the above scarce species will obtain a place. It is altogether better than the more common *M. Baxteri,* having larger leaves, less loose habits, and much finer flowers. It is a rigid shrub, capable of being managed as a climber, or simply kept in a pot, and kept within due limits. The flowers are of the ordinary description,—that is, principally pale orange, with a dark brown centre, but brighter than those of many similar plants.

TRACHYMÈNE ÁLBIDA. Amongst a great quantity of plants raised in the Clapton nursery from Australian seeds, this pretty new species of *Trachymene* has been obtained. It differs in no material respect from *T. cœrulea*, except in the colour of its blossoms; these, instead of pale blue, being of a peculiarly bright and fascinating cream-colour, comparable only to those of *Pimelea incana*, or similar species of that genus. Its tall mode of growth, which averages from eighteen inches to two feet, will prevent it from being very highly esteemed; otherwise, the aspect of the flowers is most fascinating. It blossomed in the open air through the autumnal months; and a few flowers still remain on a plant in the greenhouse.

VÁNDA UNÍCOLOR. Neither great novelty nor extraordinary beauty characterise this plant, yet it is by no means common, and the flowers are both large and numerous. A very exuberant specimen, in Messrs. Loddiges' orchidaceous house, is blooming profusely at the present season. The blossoms, as the specific name implies, are of one colour, this being a light brown on their first expansion, and deepening as they become older. It constitutes a worthy appendage to a collection, on account of its very healthy habits, and the abundance of graceful shoots which depend from all parts of its stem.

OPERATIONS FOR FEBRUARY.

Pruning, layering, planting cuttings of hardy shrubs, and digging shrubbery borders, are the chief items of the gardener's out-door labour this month. These, we know, are frequently concluded in small gardens before January; but in large places there are many circumstances which render it impossible to attend to such matters so early, and we could wish that the practice were entirely discarded. We speak principally, however, of borders, and not of small beds in which there may be a considerable quantity of bulbous plants.

The month of November for transplanting trees and large shrubs, the present season for pruning and its concomitant operations, and six weeks hence, or even later, for digging borders and dividing herbaceous plants, are severally the most suitable periods for many reasons. We shall not attempt to support the former position, as that will not be gainsaid. That this is the fittest time for pruning, we assert mainly because all plants whose branches require reducing or thinning are now in their most dormant state. It is also the most convenient, in that, during the preceding months, there are, in the majority of places, some alterations to be effected; besides which, the ground is usually frozen at this time, so that the prunings, as well as the decayed leaves and other rubbish that has accumulated in the shrubberies, can be removed without injuring the walks, verges, or lawns.

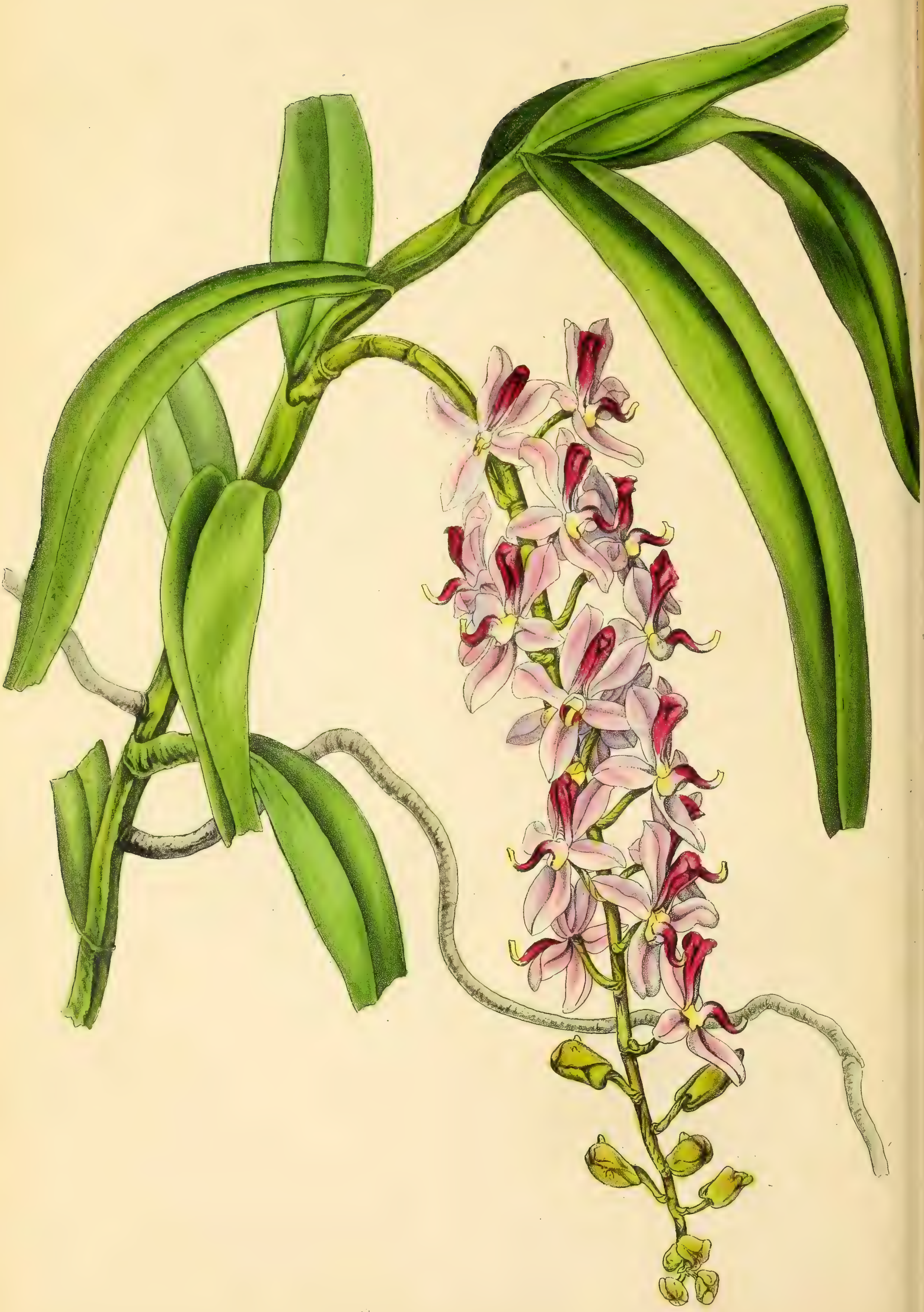
There is one particular very much neglected by persons who prune ornamental shrubs, which, in those that are at all conspicuous, occasions an unsightly appearance. It is the indifference manifested as to the point at which the severance is made. The consequence is, that throughout the ensuing summer and autumn, the shrubs may be seen covered with little dead spurs. As these have always to be cut out the next winter, it would be much easier to prune down each shoot close to a bud or eye, and thus at once prevent such an annoyance to individuals of taste as that just reprehended.

In pruning small plantations, or their exterior borders, there are far fewer shrubs whose branches need *shortening* than is commonly imagined. It is a palpable, though prevailing error, to cut in the shoots of Lilacs, Syringas, Guelder Roses, and the like. All that is requisite is an occasional thinning, with the reduction of any shoot that is extremely luxuriant; and where the plants are surrounded by suckers, it is much better that these should be entirely eradicated, than annually headed down. In short, some kinds of Roses, and plants of a similar nature, are the only shrubs that demand to have their young wood shortened; for the stronger-growing species are not adapted for planting in borders, and a little observation will show that they flower in infinitely greater profusion, as well as look decidedly more ornamental, when the knife is applied to them merely to remove positive superfluities. Shoots of the species of *Ribes*, or of any other genus, that are intended for cuttings, should be broken out if possible, instead of being severed with a knife, as they strike so much more readily when there is a group of buds at their base. To perform this skilfully, without damaging the plant, great dexterity and practice are necessary; and it must not be left to a novice.

A few words, on the present occasion, will suffice to show why we deem it prudent to defer the digging of borders till the first week in April, and we may probably give some directions for the performance of this and similar operations at the time we think they should be accomplished. First, if done earlier, it opens the soil around the roots of shrubs and plants, and, should severe frost follow at any period in the winter, will aid in admitting it to all the surface roots, and thereby cause irremediable mischief. Next, when herbaceous plants are parted before winter (which must be done if the ground is dry) they are often cast up again by frost, and their roots wholly subjected to its influence. Further, the coarser species of bulbs which such borders contain are nearly always turned over, cut, or otherwise mutilated, because the workman cannot tell their locality; whereas, if the digging were left till spring, they would be sufficiently above the earth to escape all such mishaps.

With plants in houses, the main point to be attended to is to guard against frost and damp. It should be remembered that the judicious culturist's object is not to maintain a *fixedly* high or moderate temperature, but to check the aggression of frost. Fires should, consequently, be kindled only when this occurs, or appears likely to ensue; and their energies should be directed solely to this specific end: for, if an arbitrary and useless heat is created, it is not alone the waste of fuel, but the exciting and debilitating effects which this produces on the plants, that are to be deplored.

Hyacinths desired for late flowering, should now be encouraged to develop themselves. Two essential features in the culture of these lovely flowers seem almost universally neglected. They ought to be invariably started by covering the pots containing them with three or four inches of old bark, or half-pulverised leaf-soil. A due share of moisture is thus preserved around both leaves, bulbs, and roots, and moisture is their vital element in the growing stage. When they reach the surface of the covering, they may be gradually introduced to the full existing measure of solar light, which will speedily restore the colour of their blanched foliage. Another important necessary to their complete perfection, is a large portion of river or white sand in the soil. This helps to ensure a thorough drainage; and nothing is more prejudicial to them than stagnant water. Other early-blooming bulbs may be similarly treated.



Camarotis purpurea.

CAMARÒTIS PURPÙREA.

(PURPLE-FLOWERED CAMAROTIS.)

CLASS.
GYNANDRIA.

ORDER.
MONANDRIA.

NATURAL ORDER.
ORCHIDÀCEÆ.

GENERIC CHARACTER.—*Perianth* showy. *Sepals* lateral, opposite each other, and connate with the back of the labellum; free at the summit. *Petals* somewhat smaller, free. *Labellum* obovate, channelled, with a one-chambered appendage at the point. *Column* erect, cylindrical, free, with a very long serpent-shaped beak. *Anthers* dorsal, pointletted, semi-two-celled. *Pollen-masses* two, with a very long subulate appendage. *Radicle* nipper-shaped.

SPECIFIC CHARACTER.—*Plant* epiphytal. *Stems* caulescent, ascending. *Leaves* oblong-linear, emarginate, unequal at the extremities. *Flowers* pale-purple, of a deeper hue at the point of the labellum. *Labellum* furnished with a little, crooked, hollow, awl-shaped appendage near the apex, the figure of which is that of a slipper-shaped cavity, wholly constituting the summit of this member; slightly drawn together at the sides, but expanding at the margins.

A FIGURE of this highly interesting plant, prepared from East Indian drawings, was published by Dr. Lindley in an early number of his splendid Sertum Orchidaceum, at which time it was scarcely known in Britain; indeed, was supposed not to exist. It formed a part, however, of the collection brought by Mr. Gibson to His Grace the Duke of Devonshire's seat at Chatsworth, in 1837; and having been received also by Messrs. Loddiges, a specimen flowered with these gentlemen in May 1839, from which our artist was obligingly allowed to execute the accompanying drawing.

The striking similarity of character apparent in many *Vandeous Orchidaceæ* is not departed from in the present new genus. The erect, caulescent habitude, long, tortuous, drooping aerial roots, with even the unequal emarginate foliage found in *Saccolabiums* and other congenerous groups, are here strictly preserved; the flowers alone imparting to it a distinctive individuality of structure. Still, with regard to the former particulars, it may be noted that this plant has a light, loose, airy appearance peculiar to itself, and the colour of its green portions is paler than that of the species of related genera. Respecting the blossoms, Dr.

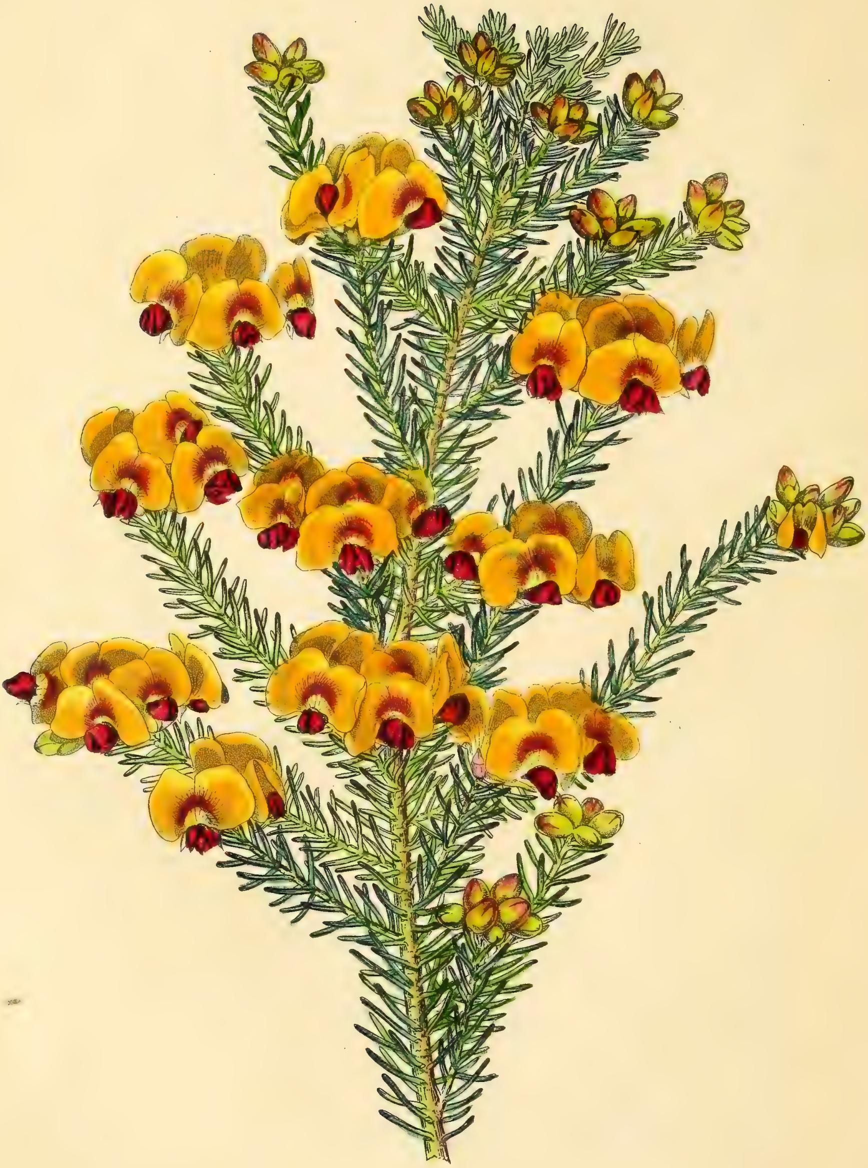
Lindley observes that "the extremely curious structure of the lip, which is distinctly chambered at the point, is one of the principal circumstances by which this genus is distinguished among its allies. Dr. Roxburgh says, that before expansion the beak of the column is lodged in this cavity of the lip."

Sylhet is the native district of this very pretty plant. Its discovery appears to be due to the estimable Dr. Carey, as we are told that Dr. Wallich obtained plants from that gentleman's garden at Serampore in 1819. Mr. Gibson procured several specimens in the woods at the base of the Khoseea Hills. It seems confined to hot moist localities, where it clings to the branches of trees for support.

These latter facts afford ample data for the regulation of its artificial culture. A warm and humid atmosphere is indispensable to maintain its healthy verdure; but as this is intermitted, even in its natural forests, its yearly suspension is equally essential to induce floral developments. As its blooming season will most probably be the months of April and May, this being the only period at which its flowers have as yet opened in this country, the growing stage will necessarily succeed; and after this is completed, it should be kept dormant till the ensuing spring.

In the manual treatment it requires, that of being originally placed on a sound rough block of wood, with the bases of its lower roots protected with moss, is the most prominent feature. Shading must be duly attended to, and atmospheric moisture maintained in the summer, since the large exposed surface of roots which these air-plants present, renders them particularly liable to excessive drought.

Where an increase is especially desired, and the attainment of this object is preferred to the retention, in its perfect state, of the specimen possessed, a temporary mutilation must be effected. The slowness with which plants of this kind can be multiplied, is generally an impediment to their diffusion; but this may, to a limited extent, be obviated, by decapitating the plant. A duplicate is thus at once obtained, and young shoots will speedily be emitted from the old stock, on which others may afterwards be formed in a like manner. The shoots thus removed should always have roots of their own, and be placed, immediately after their severance, in a warm, dark situation for several days, that their superfluous fluid may be exhaled. They must then be affixed to a log of wood, watered cautiously, sedulously shaded, and managed as their parents after they have commenced growing.



Dillwynia speciosa.

DILLWÝNIA SPECIÒSA.

(SHOWY DILLWYNIA.)

CLASS.
DECANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
LEGUMINOSÆ.

Generic Character.—*Vide* vol. iv. p. 99.

Specific Character.—*Plant* shrubby, evergreen, growing from eighteen inches to two feet high. *Stem* erect, slightly scabrous, much disposed to branch. *Leaves* extremely numerous, irregularly disposed, sessile, ascending, linear, channelled in the inner side, twisted, acute, scabrous. *Flowers* produced in clusters from the extremity of every shoot. *Corolla* with an orange-yellow standard, and reddish-purple wings.

The colonization and consequent exploration of the Polynesian islands by British and other emigrants, has latterly been the means of pouring an incalculable number of new plants into our floricultural marts, and tending considerably to increase the perplexity which the cultivator with limited facilities before experienced in selecting the most showy. There is, particularly, a large proportion of *Leguminous* plants from this quarter already grown in our collections, which have yellow or yellow and brown flowers; so that, to preserve that delightful diversity of tints which is so potently influential in the formation of a pleasing assemblage, it seems necessary that we either discard some of the old ornaments of our green-houses, or reject many of the newly arrived that are of the above hues.

Before, however, deciding against the admittance of novelties into small places, on account of the destruction of the ancient stock which they will occasion, it is well to determine the pure principles of beauty, and test the respective candidates by it alone. To bring forward an illustrative instance, although numberless interesting Australian plants with yellow blossoms are now in common cultivation, and might always be kept in large gardens, even though far superior ones were added, it behoves every amateur who has only one or a few plant-houses to be constantly changing his plants as new and more eligible ones offer themselves.

Thus, the beautiful species, a figure of which we now furnish, has flowers of similar shades to those of many others, but these being more numerous and segregated, as well as of a clearer and livelier colour, and the plant altogether exhibiting a more sprightly and elegant aspect, it is better worth growing than the majority of those we usually meet with.

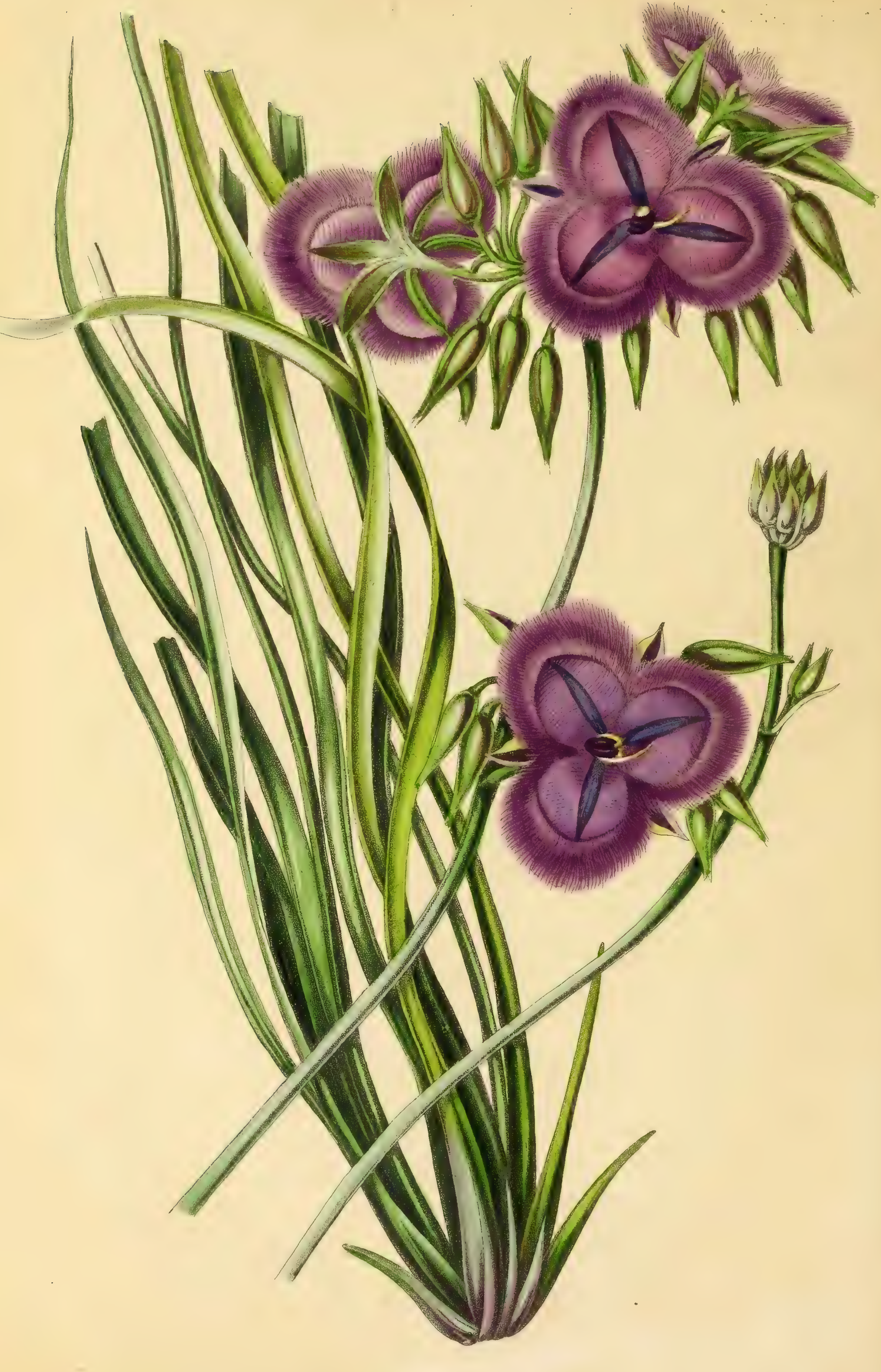
Messrs. Rollison, of the Tooting nursery, having been supplied with seeds of this plant from Baron Hugel, of Vienna, about two years since, have succeeded in raising and striking a copious stock of young specimens; and from one which flowered in their establishment during the months of May and June 1839, our plate was prepared. It is also possessed by Mr. Low, of Clapton, and perhaps by most other nurserymen. There is little doubt that it was originally found in New South Wales, but on this point we cannot give any decided information.

If the reader refer to vol. iv. p. 99 of this Magazine, where *D. glycinifolia* is figured, he will from thence obtain some hints which may prove auxiliary in the culture of the present species. We regret to see the above very lovely little plant so seldom in either nurseries or private collections. Like *Chorizema ovata*, its habit is slender and delicate, and the rough indiscriminate usage of some gardeners is often fatal to its weakly constitution. But to those who have patience enough to watch over it carefully, and minister to its wants with a tender and cautious hand, the extreme beauty of its blossoms will be an abundant recompense.

D. speciosa is far more robust. It may be managed very similarly to heaths, only needing a little loam mixed with the heath-soil in which it is potted. Its winter cultivation must be conducted with the greatest care. The gracility of all its parts is such, that it will not endure much moisture without there is a strong sun to evaporate it. Placed on the shelf of a dry greenhouse, immediately beneath the glass, it may be kept in the best health at this season, and should be set on a somewhat lower stage in the summer, when it must be profusely watered.

Cuttings taken from the young branches, towards the end of the spring, will strike without the application of any fire heat, if retained in a confined house and shaded. A trifling bottom heat, produced by partially decayed bark, is, however, of great assistance in causing the protrusion of roots, and may advantageously be employed, provided dampness be discreetly repressed.

For an explanation of the generic name, the reference before given to *D. glycinifolia* may be consulted.



Thysanotus proliferus

THYSANÒTUS PROLÍFERUS.

(FREE-FLOWERING THYSANOTUS.)

CLASS.	ORDER.
HEXANDRIA.	MONOGYNIA.

NATURAL ORDER.

LILIÀCEÆ.

GENERIC CHARACTER.—*Vide* vol. vi. p. 243.

SPECIFIC CHARACTER.—*Plant* an evergreen herbaceous perennial. *Stems* erect, from one to two feet high, leafy at the base. *Leaves* linear, channelled, sub-glaucous, very smooth, longer than the scape. *Umbels* two or three, one above the other, at the summit of the scape, sessile. *Bracts* numerous, linear, acuminate, rough at the margin. *Sepals* linear, acuminate. *Petals* oblong, violet-coloured, with a feathered margin, and a bluish streak down the middle. *Stamens* three, opposite to the petals, equal, dark-purple, curved downwards. *Style* white. *Ovary* three-celled; cells two-seeded.

NEAT as was the species of this genus (*T. intricatus*) figured in our December number for 1839, the subject of present notice will gain largely by comparison. We do not here seek to disparage the former, but would merely remark that as that plant is doubtless deserving attention, the one now described is pre-eminently so. Nevertheless, although this superiority is at once manifest, Dr. Lindley in his observations upon it in the Botanical Register, says, " it is much to be regretted that the many beautiful species of this genus found in New Holland should be unknown in our gardens, for neither the size nor the brightness of the petals in this species are at all to be compared with those of several others. These," he adds, " have from time to time been introduced, but they have always been speedily lost after their importation."

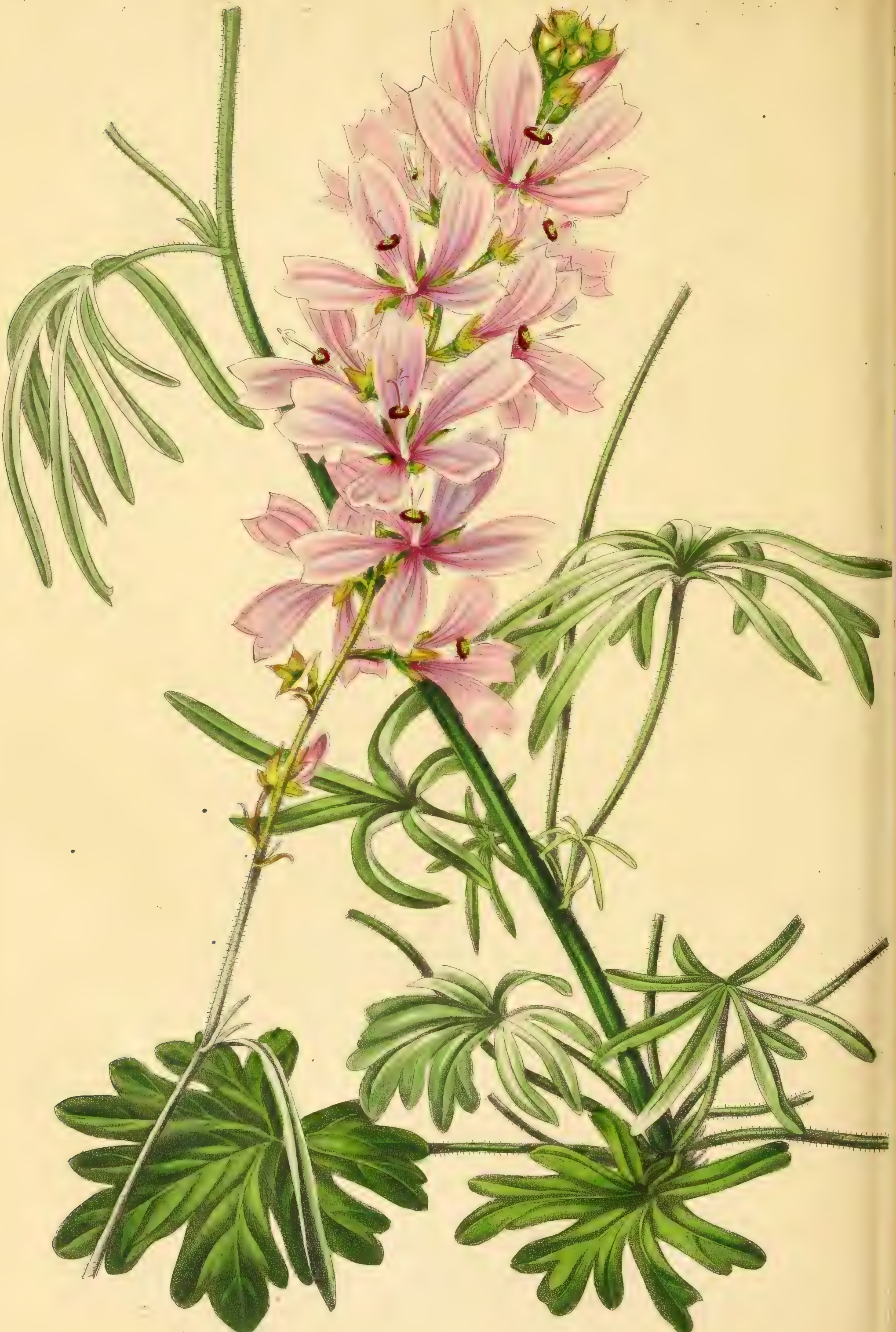
Plants possessing these attractive characteristics are obviously to be desiderated, and it is hoped that with the frequent consignments now arriving, some means may be adopted for conserving them when received. It is surprising that species of this nature, when known to be more than ordinarily valuable, should have their health endangered by strongly excitative treatment. Yet such is the common fate of most rare plants that are very tender or easily injured. Inordinate solicitude nearly always leads to disappointment; and so, by keeping these species in a hothouse, indulgently but most erroneously affording them a large quantity of water, and wholly overrating their necessities, irremediable detriment is usually engendered. It will be admitted, on reflection, that not only species of *Thysanotus*, but many more beautiful plants are thus often sacrificed, while the simple remedy of waiting on rather than forcing nature is yet almost universally unheeded.

T. proliferus was forwarded to England from the Swan River colony, about the year 1837, and appears first to have displayed its handsome blossoms in the garden of Robert Mangles, Esq., Sunning Hill, Berks. We primarily met with it at Mr. Low's, Clapton, whence, from a plant which bloomed in June 1839, our figure was taken. Its specific name has been most felicitously chosen, for no plant can be more prolific of flowers. The specimen above alluded to produced from twenty to thirty flower-scapes, with between twelve and twenty blooms on each, besides numerous nascent buds. There are usually three or four flowers expanded at once on each scape, but they are only opened when the sun is shining.

The best mode of cultivation is to place the plants in pots of a size proportioned to their extent, (never, however, allowing too much pot-room,) and a soil of which light loam should be the principal constituent, fibrous heath-soil and sand completing the compost. As is clearly demonstrated by the circumstances under which their blossoms unclose, and the mouldiness which sometimes occurs in both these and the leaves, they delight in an arid atmosphere, and, during winter, a dry soil. In summer they may be watered more freely. A thorough exposure to light is also beneficial. Where convenient, they may be planted in the bed of a small frame or pit, as they will grow more rapidly in such a position, but vigorous efforts must be made to exclude frost and damp in the winter.

They are propagated by dividing the roots in the spring months, and merely planting each division in a separate pot. When seeds are ripened, they should be sown immediately, potting the young plants and placing them on a dry airy shelf before winter commences.

The derivation of the generic name is given in vol. vi. p. 244. The specific title, as already hinted, indicates the extreme abundance in which the flowers are borne.



Nuttallia malvæflora.

NUTTALLIA MALVÆFLÒRA.

(MALLOW-FLOWERED NUTTALLIA.)

CLASS.
MONADELPHIA.

ORDER.
POLYANDRIA.

NATURAL ORDER.
MALVÀCEÆ.

Generic Character.—*Vide* vol. v. p. 217.

Specific Character.—*Plant* herbaceous, evergreen, perennial. *Stems* erect, about two feet high, roundish, branching, hairy. *Leaves* varying in form according to their position; radical ones with very long stalks, five or six-parted; segments oblong, likewise partially divided, obtuse, having several irregular crenatures, pubescent on both sides, indistinctly reticulated; stem-leaves with shorter petioles, stipulate, more deeply and numerously divided into long linear lobes. *Bracts* few, small, subulate, slightly decurved. *Flowers* borne in a terminal close spike, pedunculate, of a light rose colour. *Calyx* persistent, separated into five equal, ovate, acute segments, hairy. *Corolla* expansive; petals distant, inclining to a spatulate shape, emarginate, sometimes a little jagged.

In the hope of stimulating some of our readers to the cultivation of the very meritorious genus *Nuttallia*, we have previously introduced coloured delineations of two scarce and superior species, (*N. grandiflora* and *papaver*,) both easily managed, but rarely seen in such a state as to excite either a wish for their possession, or emulation in their treatment. This plainly betokens some radical mistake on the part of the grower, into which it is necessary inquiry should be made.

After many endeavours to discover the cause of such palpable degeneracy, we believe we have now traced it to a likely source. These plants are generally kept in greenhouses or frames through the winter, where they are often stimulated to precocious growth. This latter imperatively demands that they should be similarly protected till the season is very far advanced; and thus they are so weakened by the time the weather permits of their being planted out, that they never properly recover their wonted vigour. Now, the best plan of culture is to plant them in a dry, elevated, sheltered border, where they can be slightly covered in winter, and left to their natural progress. In the front border of a conservatory in North Britain, placed in an auspicious spot formed by an angle of the building, we are told that a specimen of *N. grandiflora* grows to a large bush five feet high, and is most prodigally clothed with its specious blossoms.

The lively little species to which we have now to call attention is not equal, either in the size or richness of its flowers, to those already mentioned. It is, however, entirely new; while both the habit and blossoms are exceedingly elegant. Messrs. Young, of the Epsom nursery, possess plants of it, which were furnished from the Glasgow Botanic Garden, where it is regarded as an inhabitant of Texas. We have not seen it in any other London nursery, and presume it flowered for the first time in Britain at the above establishment in August, 1839. To this firm we owe our opportunity of obtaining the present drawing.

Being a slender evergreen species, it would seem to require rather different treatment from that we have been recommending for its allies. In the absence of any accurate knowledge of its habits, it has very naturally been confined in a greenhouse hitherto, and to this circumstance some of the paleness of its flowers, together with the tenuity of its stems, is most probably due. Both these points would certainly be improved by summer exposure, or, if the plant is found capable of enduring it, a constant position in the open ground.

But whatever doubt may be still entertained regarding its degree of hardihood, there can be none respecting the propriety of subjecting it as much as possible to the solar beams, and using every method to check its development through the winter. Comparative drought, and a light, well-ventilated situation, are the only particulars which we need enforce; but they must be considered of paramount and even vital moment. To maintain the former of these, nothing is of more consequence than observing to provide each specimen with a pot of the precise size, or, in preference to being larger, rather smaller than the extension of its roots positively requires.

In its multiplication, the roots must be divided at the collum or neck, although cuttings may occasionally be procured which, with considerable care, are now and then induced to form roots. Seeds are sparingly matured, and when these can be saved, they of course supply the readiest means of increase.

The specific name, *malvæflora*, alludes to the close resemblance which the flowers bear to some species of *Malva*. It is adopted here on account of its great appropriateness.

CULTURE OF PELARGONIUMS.

PELARGONIA, more generally known by the name of Geraniums, from which, however, they are widely different, may be classed into three distinct natural groups. There are, first, those with herbaceous stems, including a few annuals, biennials, and perennials, which section is scarcely known in this country. A second, and more extensive division has similar stems, but tuberous roots; and of this a small portion is cultivated in large collections. The remainder, comprising by far the greater number, consists of low evergreen shrubs, the offspring of which occupy a very distinguished position in British gardens. It is to these latter the succeeding observations are entirely directed.

Having promised, some months since, to recur to this subject, and finding several subscribers anxious to receive our sentiments and advice hereon, we shall compress into the least possible compass a comprehensive statement of our own opinions and experience, with a like compendious outline of the routine usually followed in those metropolitan establishments, where the most signal success is now commonly experienced. For the sake of facilitating reference, we may arrange our individual directions under three heads, and afterwards add a slight sketch of the London growers' practice.

Summer treatment.—Merely premising that we intend in this period to embrace the months from April to October, inclusive, we will suppose all our readers, who cultivate this tribe, to have either a greenhouse or frame in which to preserve them. In whatever structure they are kept, it is important that they be grown apart from other plants, and, where practicable, in a place appropriated wholly to that purpose. Their succulent nature, excessive partiality for light, and the peculiar temperature they require at certain seasons, all enjoin the provision of a detached department, wherein every needful assistance can be duly and timeously given, without interfering with any of those distinct and very dissimilar assemblages of plants, with which they are too often associated.

For every desirable object, whether of health or luxuriance, the production of flowers, economy of labour or heat, convenience, or appearance, frames are incontestably the fittest receptacles for Pelargonia. Each of these particulars might be separately urged; but it is hoped their simple enumeration will carry conviction to all whom we address. Every one is aware that these plants are rather unsightly than otherwise in winter; that they are only or chiefly ornamental while the flowers are expanded; that they cannot be too near the glass in some stages, or in too confined an atmosphere at others; and to secure their seclusion or proper management at all these epochs, they must be kept in a frame; removing them to a greenhouse, or other show apartment only while their blossoms are in progress or unclosed.

To advert to each principal period of development, display, and dormancy, in its chronological order, the time and operation of potting first demand discussion. This point should be attended to very early in the month of April; at least, the primary translation must be effected at that time. If the season we have named be deemed too late for southerly districts, we may repeat, what has been elsewhere asserted, that no plant should be potted till its vital energies are in action. This is a safe rule, and equally applicable in the present case as in all others. When, therefore, the shoots of any specimen solely beneath natural agency are seen to begin lengthening, the whole collection of Pelargonia should be immediately transferred to other and larger pots; for, being of a kindred nature, the same general economy may be observed with all.

The mysterious dogmatism with which some writers recommend the incorporation of half-decomposed animal, vegetable, or mineral matters in the compost used for such plants as the present, forms no part of our system. In the soil we employ, the only ingredients are fresh turfy loam, rich in quality, and friable in texture, decayed leaf-soil or light manure, a trifling proportion of silver sand, if requisite, and, indifferently, a very small quantity of heath-soil or none. The earth first specified may be obtained from any suitable field, common, or park, in the autumn immediately preceding its requirement or two years previously, and often turned over to reduce it to a proper degree of fineness, but never sifted. Of the whole, there should be two-thirds loam, one-fourth either or both of the enriching substances before mentioned, and the rest heath-soil and sand. These should, of course, be thoroughly blended.

When potting Pelargonia for the first time in each year, the operator must be scrupulously guided in his clearance of the old soil by the particular circumstances in which every specimen happens to exist. If the soil is saturated with moisture, and the young shoots of the plant turgid and preternaturally excited in consequence, or if the former be very closely conglomerated into a hard mass, that is likely to prove interruptive to the percolation of fluids, it must be completely shaken from the roots. This should be accomplished by placing the base of the ball on the potting bench, and striking it gently all round with the hand. Should that be ineffectual, a flattish obtuse stick, with rounded edges, must be employed; and the same implement will afterwards be found useful in adjusting the soil round the roots of others that have not been similarly liberated. In either case, special importance should be attached to resting the roots on some solid substance; for, if held in the air, large masses of soil are apt to break off at once, and tear away all the fibres with which they may be connected.

All plants whose roots are thus freed from earth, ought not to be placed in pots of greater dimensions than they originally occupied. It is a standing principle with experienced culturists, that no specimen should be allowed a larger pot till the one in which it is growing is filled with fibrous roots; and that subsequent shiftings be trifling and oft-repeated, in preference to only one or two abrupt transitions annually. This is one of the prime secrets in the right management of flowers. It induces a regular development, both of stems and roots; wholly prevents saturation; provides for the due production of blossoms, by restraining all extraordinary exuberance; and retains the plants subjected thereto in a sound vigorous, and prolific condition. In short, it is a perfect *sine quâ non* to distinguished, or even common success, in cultivation.

Those specimens that do not need divesting thoroughly of the soil in which they are already established, should pass through the same process of a light handling on the exterior surface of their ball, in order to set the tender, nascent, progressing roots at liberty, and enable them directly to diverge into the new earth. The top of the ball should also be slightly stirred with a blunt wooden instrument, that no induration in this part may obstruct the passage through every inch of its composition of the water afterwards supplied. That clean dry pots, and abundant drainage, are indispensable, is too trite an instruction to insist on here; so that we shall consider this as universally acknowledged. As a general direction, there should be from half an inch to three quarters (never more) of vacant space between the roots of a flourishing plant and the newly-provided pot. Into this vacuum the soil should be gradually introduced, and pressed in, neither loosely nor firmly, but to an extent precisely intermediate between these extremes, with the stick previously described; always conducting this last near the edges of the pot, and so as not to damage the extremely susceptive rootlets that lie on the outside. By this means all those interstices which would otherwise occasionally occur, and, from several causes, might injure the plants, will be infallibly filled.

Still greater care must be exercised in distributing the soil about the roots of the sickly or diseased plants, that have been deprived of all their former compost. No instrument can be here used; but the earth is to be slowly scattered over all the roots, and caused to settle steadily in its proper position by cautiously oscillating or lifting the stem, and striking the bottom of the pot flatly on the bench. A soft but copious sprinkling of water, to complete the compactness of the earthy renewal, and invigorate the freshly potted plant, is an invariable concomitant of this operation, and therefore may be dismissed without further mention.

We have allowed considerable prominency in our article to the foregoing point, because it is, in fact, the feature of most consequence; every other circumstance being, to a very great extent, unavailing, unless this is rightly regarded. If asked how the administration of water is to be regulated, we reply principally by the manner in which its subject is potted, though in some degree by vicissitudes in the weather. So, when requested to offer our counsel as to the degree of light and heat needful, we are constrained to test this partly by the mode of potting; since the redundancy or deficiency of fluids, which alone render a greater or less amount of heat and light necessary or endurable, are mostly to be traced to that source. And should we be desired to explain the profuse or defective display of flowers in different plants of the same species, we can always assign this to some congenial or improper system of shifting them. Such, then, is our excuse for so elaborate an exposition of this isolated but incalculably influential process.

From the time at which the transference thus minutely detailed is achieved, to the protrusion of flower-buds by the main shoots, the superintendence to be observed is of a nearly uniform description. Further potting, the necessity for which will be determined by the manifestly straitened condition of the roots, can be conducted exactly as before. The only difference in its operation, is the less strict, and yet more gentle, rejection of the extreme outer coat of soil, as this is always, though imperceptibly, impregnated with the excretions of the spongioles so largely collected in that locality.

By a thoughtful remembrance of the native clime of Pelargonia, and a reference to the fact, recently demonstrated, that at the Cape of Good Hope solar light is fully twice as intense as in England, it will be perceived that these plants enjoy naturally a far larger quantum of this refined element than we can by any method afford them. The defalcation in this respect, ought, consequently, to be reduced to the lowest possible proportion. Light is to them, emphatically, the most vital constituent of the atmosphere ; and one, the effects of whose existence or lack, are most clearly conspicuous. There is scarcely a collection in Britain that does not suffer in some way for its insufficiency ; this being mainly owing to an unfounded objection to keeping them in frames.

RUDIMENTS OF THE NATURAL SYSTEM OF BOTANY.

NO. II.

The study of botany is, without question, productive of purer pleasure than that of any of the more occult sciences, or even those which have locomotive living beings for their basis. It is in this field that the more polished of mankind, and such as feel the love of Nature most strongly pervading their hearts, especially delight to divert themselves. The interminable variety of its objects, the distinguished beauty with which many of them are invested, and their perfect passiveness to our control, present three distinct features that are, of all others, most calculated to excite our attachment, but the union of which may be sought in vain elsewhere.

There exists, however, a latent prejudice in most minds to the engaging in any investigation of botanical systems. They are too abstract, and therefore wearisome, it is generally said, to induce that close attention, without which they could never be retentively grasped by the understanding. An obvious want of familiar or interesting illustrations is continually experienced. Throughout all instructions in difficult studies, special prominence should be given to their elucidation by engaging examples. By these the student's memory is powerfully impressed; and, as with the figures stamped on any ductile material, the more forcible the instrument, the less likely is its operation to be effaced.

It is entirely on this principle that we have entered upon the explication of the natural arrangement of plants. In itself, it is not only unalluring, but positively repulsive. The collection into a small compass of such an immense number of scientific names and technical phrases, all compounded from foreign languages, and two of these sometimes arbitrarily associated in the same word, is enough to discourage any youth of common capacity from essaying its conversion to his chosen purposes.

Botanical, still more than gardening literature, has an idiom of its own. The professors of both, writing and conversing most upon their several favourite topics, and to or with individuals of equal attainments to themselves, are too often unintelligible to the majority of the reading public. In each of these departments we endeavour to avoid such a palpable fault. Accordingly, we shall, in the present and ensuing papers, apply popular appellatives to the different vegetable organs, except in those cases where a more abstruse term has been defined in any previous part of the series.

Unwilling to indulge in needless iteration, we shall direct the reader to p. 177 of our last volume, for on account of the first partitions of this classification, and a full enunciation of the essential characteristics of the principal sub-class, *Exogens*. As it will be important that these should be contrasted with *Endogens*, which we have now to describe, it may here be repeated that the chief characters of the former are their branching stems, in which three separate layers—pith, wood, and bark—are discoverable, their finely and irregularly veined leaves, which decay and fall at once, and in an entire state, and the decided division of the seeds into two pretty equal lobes.

In all these particulars Endogens are wholly different; presenting, indeed, points of distinction directly the reverse. A transverse section of one of the ligneous species of this sub-class exhibits a complete agglomeration of tissues; no line of demarcation being discernible. The bark cannot be recognised from the woody portion by any particular property or trace of disjunction, and is simply a more compressed and indurated part of the stem. No pith whatever can be seen, as the place where this is met with in Exogens is filled with the new woody developments.

Endogens being, for the most part, exotic plants, and denizens of tropical climates, have never been satisfactorily examined by botanists. The arboreous specimens cultivated in northern Europe are too valuable to be made the subjects of experiments, even if their growth were in all respects cognate with what it would be in their native wilds. On the other hand, those travellers who have passed a long time in places favourable for observation, have frequently lacked either time, means, or disposition, for pursuing the inquiry.

Partly from such reasons, and perhaps, likewise, from some striking singularity of structure which the most enlightened and piercing eye cannot exactly fathom, the precise mode of their enlargement is by no means well authenticated. Our analysis of the commonly received theory will be mainly restricted to the arborescent forms, because, in the smaller herbaceous species, it is next to impossible to arrive at any satisfactory conclusions, on account of their short duration and very rapid growth.

Palms, and the species of *Pandanus*, or screw-pine—many of the former of which, and a few of the latter, may be seen in those gardens that contain extensive hothouses—constitute the most gigantic and simple forms of *Endogenæ*, and their composition should, in consequence, be most sedulously studied. It has been affirmed that they consist, primarily, of the same constituents as Exogens, and that their diversity of form is assumed at the close of the first year's extension. However this may be, an old stem exposes to view a mass of cellular tissue, in which a vast quantity of longitudinal bundles of fibres is imbedded. We have before us a piece of palm-wood, wherein this structure is very plainly perceptible. It can be reft longitudinally into as many strips as there are fibres; yet these last are almost as hard as metallic substances, and cannot be cut with a knife.

But some species of palms, instead of having their fibres disposed in a direction parallel to the elongation of the stem, display, on being severed, such an extraordinary intermixture of them, with such various tendencies in each, that it is with extreme labour their course can be traced. We cannot but suppose these departures from the ordinary route. The best-established form is certainly that in which they take a direct downward line, diverging only when opposed by unnatural obstacles.

Pandanaceæ must be excepted from the above assumption. Their vessels, striking into the stem from the bases of the leaves, proceed down its centre to the place where it becomes narrower, when they shoot outwards, emerge through the cuticle, inclining towards the earth, and continuing to grow in this position till they penetrate the ground, and fulfil the offices of roots. There is something apparently quite unique in the habits of this group of Endogens, though, in reality, they do not depart from the customary conformation; serving to explain much of what seems extremely dubious respecting the development of the plants composing the sub-class.

A slight survey of our specimens of the *Pandanus*, will convince the reflecting observer that the leaves are the great laboratories of all solid accretions, and the sources from whence they issue. Passing from thence, the ligneous fibrils descend through the cellular substance, where, acquiring a motion towards the surface as they advance, probably through the force of the central rising fluids, they burst from their exterior covering, obtain a new epidermis by exposure to the air, and after the lapse of several years have all the appearance of separate stems. Could we see one of these plants for the first time, with a circle of such extraneous supports, all of which had, in appearance, finished their progress, and were firmly fixed in the soil, we should unhesitatingly consider them divisions of an *ascending* axis, which had united into a common trunk at the point where, knowing their descending origin, we are satisfied they primarily protruded.

We may justify so detailed a reference to an isolated plant, by the maxim of exemplification which we have before prescribed to ourselves. To our eyes, the characters thus delineated cast a more certain light on the growth of Endogens than any more collective circumstances that could be adduced. We have only to suppose the exterior accumulations of the fibres—usually called roots—of *Pandanus* still confined within the stem, and we then perceive, at one glance, that its trunk is not, literally, less at the lower than at the upper end; that its numerous auxiliary props are incontrovertibly parts of itself; that in all Endogens the *same* mode of enlargement is carried on, though within the limits of the cuticle, and concealed from our ken; and, finally, that notwithstanding the principal fountain-head of all accretions lies in the fluids extracted from the soil, these are assimilated, concreted, and solidified in the leaves, and issue thence in the form of fibres, which make up the woody matter of both stems and roots.

Were speculation and theorising not in some degree interdicted from such professed abstracts of existing hypotheses as the present, we could wish to prolong the preceding surmise at the origin of roots. Not wishing to violate this restriction, we shall just deliver it as our deliberate conviction, that the source of roots in all plants is similar to that of the curious appendages to the *Pandanus*, merely being carried to the earth through internal channels, instead of exhibiting themselves on the outside of the bole before reaching the ground.

Bulbous plants rank next to palms, in point of ornament, beneath the Endogenous sub-class. The leading property of the whole group is very prominent in this division. All are cognisant of the truth that bulbs expand from the centre, produce new scales around the middle of their substance, and are never aggrandised from without. But many who scan these pages may not know that bulbs are real stems, possessing every quality for which these are distinguished, save that of elongating into a lengthened or conspicuous axis; and for such it is requisite to state this much, that the previous declaration may be duly comprehended.

Grasses, although excessively numerous, and many of them of the greatest value, are the most inscrutable of all Endogens. Their cubical construction—the result of the amazing quickness with which they spring to maturity—almost defies any arrangement under divisions founded essentially on the elementary consistence of stems. Still, those whose culm thickens at all after being first inflated to its natural extent, always receive the augmentation from the interior; and the simple leaves, as well as one-lobed seeds of this order, will sufficiently guide the inquirer to a knowledge of their Endogenous description.

Our arrangement forbids that we should now dilate upon other orders; and to perfect that lucidness which we earnestly desire to attain, we shall end with a summary of the only means for deciding the individual marks of either Endogens or Exogens. To be thoroughly armed against mistakes, the examiner must never depend on one, or even two points, in the sketch we have drawn. Some grasses, for instance, branch most abundantly, and bamboos are said to throw out such astonishing numbers of lateral shoots, as to form an impenetrable phalanx to the weaker kinds of animals. Other Endogens have minutely-veined leaves; most Orchidaceæ (which also belong to this sub-class) shed their foliage by a perfect disarticulation from the stem; rushes have often a large portion of pith, and these are likewise Endogenous. It is not to be inferred from such exceptions that no universal rule can be established; but solely that unless we inspect and compare *every* member wherein the peculiarities are in any degree palpable to the senses, we shall be in danger of falling into extensive and pernicious errors.

FLORICULTURAL NOTICES.

NEW AND RARE PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR FEBRUARY.

Bouvárdia splé ndens. Although approximating greatly to some other *Bouvardias*, this splendid plant has flowers of a deeper and more brilliant hue than any similar species known in British collections. It has narrow, lanceolate, acuminate leaves, which appear to be distant, and produced in whorls of three: the blossoms are arranged in terminal corymbs, being numerous, dense, and of a uniform rich vermilion, or scarlet colour. It flowered in the Edinburgh Botanic Garden in July and August 1839, having been obtained from the London Horticultural Society. There is a peculiarity in its propagation which deserves to be recorded; it is, that Mr. M'Nab has failed in striking cuttings taken from the shoots, while he " has found it very easily increased by slips from the roots not half an inch long, and covered so as to leave the upper extremities only exposed and level with the surface." Seeds, however, will most probably ripen. *Bot. Mag.* 3781.

Catasètum Russelliànum. This remarkable species has been named by Sir W. J. Hooker as a tribute to the departed worth of the late Duke of Bedford, it having been the last new plant that flowered at Woburn previous to His Grace's lamented decease. " In him, science and the arts have lost a steady friend and a munificent patron; and botany and horticulture, in particular, have seldom had a more devoted admirer." The species was collected by Mr. Skinner in Guatemala, and sent to Woburn in 1838. The pseudo-bulbs are not of an uncommon description, being short, thick, and marked all round with transverse rings, denoting whence the leaves have fallen. But the raceme of flowers is particularly prolific and extensive, while the individual blossoms are expansive and pale green, with a very large lip, which is nearly white, striated with green, pouch-shaped, and having an undulating fimbriated margin. *Bot. Mag.* 3777.

COBŒA MACROSTÈMA. With much of the habit of the old *C. scandens*, this species has far inferior flowers, as green and greenish-yellow are their sole apparent colours. It has smooth, angular, climbing stems, alternate, pinnate, hairy foliage, the petioles of which terminate in profusely-branching tendrils. The peduncles are excessively long, curving downwards, and bearing a solitary flower, which is smaller than those of *C. scandens*, and has stamens that protrude considerably beyond. Mr. Skinner discovered it in Mexico, or some adjacent country, and transmitted seeds to Glasgow, plants from which bloomed in November 1839. It is supposed to be a half-hardy plant. *Bot. Mag.* 3780.

EPIDÉNDRUM PARKINSONIÀNUM. J. Parkinson, Esq., late H. B. M. Consul-General at Mexico, having enriched the collection at Woburn with this, among many other beautiful orchidaceous and cactaceous plants, it is very appropriately chosen as being, according to Sir W. J. Hooker, "the finest of the very fine genus *Epidendrum*," to commemorate the botanical zeal of that gentleman. It has elongated, roundish, branched stems, with leaves that differ in form, but are narrow, very thick, slightly grooved, and occasionally a little acuminate. The flowers spring from the base of the uppermost leaf in an erect spike. They are two or three in number, scentless, nearly four inches across, brownish-green, with a large, orange-coloured, deeply three-lobed lip, the lateral segments of which are broad and jagged, the central one larger and linear. *Bot. Mag.* 3778.

GELASÌNE AZÙREA. A singular little bulbous plant, essential to a complete collection, but not sufficiently showy for ordinary gardens. From seeds received by the Hon. and Rev. W. Herbert from J. W. Booth, Esq., of Boston, and gathered in the Banda Oriental, as well as near Rio Grande, it was raised in the greenhouse of the former gentleman at Spofforth, and blossomed in the spring of 1838. "Seedlings grow rapidly, and will probably flower at a year and a half old, and promise to be hardy with the protection of a few leaves, and to retain their foliage, in part at least, through the winter." The leaves are lanceolate, acute, and strongly nerved. The flowers are elevated on a long slender scape: they are bright blue, with a white streak, and spotted with black at the interior of the base. *Bot. Mag.* 3779.

IMPÀTIENS MACROCHÌLA. One of the most beautiful of all the East Indian Balsams. It was introduced in 1839 by the Honourable Court of Directors of the East India Company, and seeds or plants presented to the Horticultural Society were cultivated, and produced flowers in their garden at Chiswick, throughout the whole of the autumn. It is a rapid-growing, erect annual, with smooth, prominently veined, ovate, serrated, and conspicuous foliage, and very showy pinkish-purple flowers, of which the large lip, hollowed at its base, and yellow, with numerous brown spots in the centre, is the most interesting feature. Being a native of the North of India, it appears quite capable of standing unsheltered in our borders through the summer, and is certainly a very valuable annual. *Bot. Reg.* 8.

Impàtiens tricórnis. Another pretty species, procured from the same source as the preceding, and in some respects resembling it, but far less handsome. The flowers, instead of being terminal and pink, are produced in axillary racemes, and are of a yellow colour, the inside of the lip being spotted with reddish brown. The base of the lip is likewise tailed and recurved, and the seed-pods are much longer. It is a deserving annual, and, like the foregoing, will most probably thrive in the open air. India is said to contain at least a hundred species of this attractive genus, all of which are more or less ornamental. *Bot. Reg.* 9.

Mandevílla suaveòlens. Hitherto known in nurseries only by the name of the Chile Jasmine, this charming climber has borne a high character, which it seems fully to merit. Mr. Tweedie had sent seeds of it to this country from Buenos Ayres, but it has also been received by the Hon. W. F. Strangways from H. J. Mandeville, Esq., H. M. minister at the above place, and after the latter gentleman Dr. Lindley has named it. It has fine foliage, a graceful habit, and large white blossoms, which appear in axillary clusters, on long slender peduncles, and are very fragrant. From some experiments made in the Horticultural Society's Garden, it was found that the plant was destroyed in the open ground during winter, that when grown in a pot, although it otherwise flourished, it did not flower, while specimens planted in a conservatory border bloomed freely. It must not be restrained in summer, as the flowers are produced towards the ends of the shoots; but a close pruning is requisite each winter. *Bot. Reg.* 7.

Maxillària cucullàta. This very curious *Maxillaria* first flowered in His Grace the Duke of Devonshire's collection at Chatsworth, in September 1838, having been brought from South America by Mr. Henchman. Its pseudo-bulbs are oval, compressed, and one-leaved, and from the sheaths which envelop them while in a young state, the flower-scape arises. This last is tall, jointed, covered with imbricated inflated scales, and surmounted by a solitary blossom, which resembles those of some species of *Trigonidium*. Purplish-brown is the principal colour of the flowers. The species may be cultivated as the rest of the genus and its associates. *Bot. Reg.* 12.

Pùya cœrùlea. With most other plants of this order, the flowers of the present species seem fugitive. It is, however, a nearly hardy perennial plant, and hence somewhat of a novelty. A specimen of it was shown in 1838, at one of the Horticultural Society's exhibitions in Regent Street, by Mr. Lambert, and it has been grown in gardens under the name of *Pourrettia cœrulea.* With long, attenuated, and prickly leaves, like those of an Aloe or Pine-apple, it has strong, erect, branching flower-stems, and deep blue blossoms. Valparaiso is its native region. "If not injured by frost, it will grow in the poorest soil, and the driest situations, and would form a most picturesque ornament of rough rocky banks in the warmest parts of England and Ireland." *Bot. Reg.* 11.

The subjoined short notices of the most interesting Swan River plants figured in the final Numbers of Dr. Lindley's Appendix to the Botanical Register, will probably be of some service to the purchasers of these beautiful productions. We have purposely selected only such as appear to present the greatest claims to the culturist's consideration.

ANIGOZÁNTHUS HÙMILIS. Apparently one of the handsomest species of the genus. It possesses the great merit of being particularly dwarf, all the other species being more or less diffuse in their habits. The foliage is falcate, channelled, hairy, and acute. The flowers are green on the inside, but dark brownish-purple externally, and covered with a very perceptible rufous pubescence. It has an erect flower-scape, but perfectly simple, and shorter than the leaves. This species is to be preferred, before all its allies, for small collections.

ATELÁNDRA INCÀNA. A shrubby plant, clothed with short hairs. The branches and leaves are opposite, the last being, besides, of a lanceolate figure. It seems to bear an abundance of purplish-lilac flowers, which issue from the axils of the leaves, and are somewhat similar in form to those of *Chilodia scutellarioides*;—a plant now pretty well known. They are, however, rather larger, and of a little darker colour.

CALADÈNIA LONGICAÙDA. The orchidaceæ of Western Australia appear to be all terrestrial; and of those which have been described, the one now demanding notice ranks with the most showy. It "varies in height from one to two feet, and proportionately in the size of its flowers." With a furcate stem, and narrow, oblong, very villous leaves, its blossoms are borne in erect spikes, and their outline is highly curious. The sepals and petals are yellow and alternated, with long purple tails at each of their extremities; while around the edge of the ovately-oblong labellum there is a fine purple fringe. This species is richly deserving of cultivation. Its treatment, and that of all other orchidaceæ from this region, is comprised chiefly in planting it in a rich soil, watering very freely in summer, and exposure to as large an amount as possible of direct solar heat. It must be kept dry when not growing.

DIÙRIS FILIFOLIA. Another attractive orchidaceous plant, exceedingly like *Cymbidium ensifolium* in the contour, colour, and disposition of its blossoms. It has an ascending flower-scape, with dull yellow flowers, which are numerously spotted with brown. The lobes of the column are nicely fimbriated with reddish-purple. Though in a slight degree inferior to the preceding plant, it is an engaging object, and will be valued by such as are partial to the terrestrial division of the tribe.

GASTROLÒBIUM CORDÀTUM. A vigorous-growing shrub, with opposite, cordate, nearly orbicular, mucronulate foliage, which is evidently of a very ornamental character. The bright yellow flowers appear in terminal spikes: they are numerous, papilionaceous, and showy. The seed-pods are remarkably hairy. It will obviously be a desirable acquisition to our greenhouses.

Johnsònia hírta. Without exhibiting any peculiarly striking feature, there is an air of simple grace and beauty about this little plant which is extremely pleasing. Deprived of the flowers, it is a grass-like species, not very dissimilar to some kinds of *Stylidium.* Its leaves are long, narrow, hairy, and radical, all diverging from a common base around the flower-stem. The blossoms are elevated on a slender peduncle, from four to six inches long, being there aggregated into small heads, of which the most conspicuous portion is the pretty pink bracts or involucres.

NEW, RARE, OR INTERESTING PLANTS IN FLOWER IN THE PRINCIPAL SUBURBAN NURSERIES.

Acàcia oxycèdrus. We were much gratified by encountering this valuable plant a few days since at the nursery of Messrs. Chandler, Vauxhall. It first appeared in Britain about the year 1824; but there is now scarcely another commercial collection that contains specimens of it, notwithstanding that it is, in several points, the most ornamental of the very showy genus to which it belongs. The leaves greatly resemble those of *Araucarias*, the habit is symmetrical and compact, and the flowers, which are pale yellow, are arranged closely in cylindrical spikes of nearly two inches in length. The current notion that only old plants of this species produce flowers, is a most decided mistake; for the plant to which these remarks refer, is not more than a foot high, and bears large quantities of blossoms. It cannot be too highly praised, as its unquestionable beauty, and the season at which its inflorescence is unfolded, fully justify and corroborate our laudation.

Acanthophíppium striàtum. This exceedingly modest and agreeable orchidaceous plant is just blooming beautifully in Messrs. Loddiges' extensive establishment. It has the habitude of *A. bicolor*, and the pseudo-bulbs and leaves are similar in form, but it is much smaller in every member. The flowers, however, most thoroughly distinguish it. These are of a delicate transparent white, with several pleasing parallel streaks of light purple down the sepals and petals. The lip of this genus is of a most elegant and admirable construction, being attached to the centre of the flower by a very narrow ligament, which expands into a cucullate covering above the summit of the column, and is ultimately again elongated into a prettily painted lobe, which is longer or shorter according to the species. In *A. striatum* this is broad, acute, and richly as well as very liberally mottled with purple. It is rather remarkable that while the bracts of this plant are larger than the sepals, they are similarly and almost as richly coloured.

Acanthophíppium sylheténse. Like the preceding plant, this is a native of eastern India, from whence, indeed, it derives its name, and is at present flowering with Messrs. Loddiges. It is altogether stronger than *A. striatum*, and in this particular approaches *A. bicolor*, though the blossoms are hardly so showy as those of that species. With conical pseudo-bulbs, and large, abundant, deep green, ovate, numerously-nerved foliage, its flowers proceed, in common with those of its congeners, from the sheath of the newly-organized and growing pseudo-bulb. The peculiarities of the blossoms are a light cream-coloured ground, with many irregular spots and blotches towards the extremities of the outer portions, and a long narrow yellow lobe to the labellum. Both these plants, being terrestrial, must be grown in pots of very light soil, carefully drained, and kept quite dry during the autumn.

Corrœa bícolor, &c. The floricultural market is now filled with hybrid Corrœas, and the lovers of attractive winter-flowering plants will have no difficulty in selecting from them a few really inestimable kinds. The one whose title especially heads this notice, is, beyond doubt, the most distinct that has yet met our observation. Its leaves are not at all singular, being simply somewhat small and oval. Nor are the flowers nearly so large as those of some others. Still, the combination of white and crimson in the same blossom,—the lower part of the tube being crimson, the upper white,—occasions a most unique and alluring appearance; and, for novelty and liveliness it is unsurpassed. *C. rosea* is, on the other hand, without exception the most inferior hybrid we yet know. Its flowers are rose-coloured, smaller, and less brilliant than those which any of its allies bear. *C. rosea major* is related to the last, but having much larger flowers, and in all respects very greatly superior. Another sort, called *C. turgida*, is particularly interesting. It has fine handsome leaves, and noble dark crimson blossoms, the tube of which is swollen in the centre and the terminal segments recurved. *C. densa*, again, has a more regular corolla, while its habit is better, on account of its growing so dense, dwarf, and bushy. Lastly, *C. pumila* is the dwarfest of all, with flowers of a size and hue equal to any other, and indisputably the best foliage. The whole of the above are blooming most splendidly at Mr. Knight's, Chelsea, and although the propriety of attaching specific names to each may be questioned, their decided difference and the superlative value of some of them, will not be doubted by any person who examines them connectedly.

Crìnum Commelìni. Throughout the comprehensive genus *Crinum*, there is not a more engaging species than the present. It does not grow more than eighteen inches high, has long, partially diffuse, but most lively green leaves, and flowers three or four times in one season. The blossoms, which are of a considerable size, are borne in great profusion, and, with a white ground, have a beautiful pale purple streak down the middle of each segment. Messrs. Henderson, Pine-Apple Place, possess a large specimen now flowering with extreme freedom in the stove. It is a luxuriant growing plant, and merely needs planting in a rather spacious pot and a rich loamy soil, to blossom and propagate itself in the greatest perfection and rapidity.

Dendròbium cœrulèscens. Those who wish to witness the trifling disparity between this plant and *D. nobile*, may, by visiting the collections of Messrs. Loddiges and Rollison, see the latter species in flower with the first-named gentleman, and the direct subject of these comments also blossoming in the Tooting nursery. *D. cœrulescens* has stems a little weaker, and of a less deep verdure, while the sheath at the base of the leaves embraces a rather greater amount of the stem's surface than is the case with *D. nobile.* In the flowers, however, the principal distinction resides; since the lip of *D. cœrulescens* is less pubescent in the interior, and is acute and recurved at the point, while the colouring matter in the sepals and petals assimilates much more closely to a *bluish*-purple. Each of them is in the highest degree enchanting, and they are equally deserving of the culturist's care.

Phàius grandifòlius; *var.* In the orchidaceous-house of Messrs. Rollison, Tooting, a trifling variety of this very old species is exhibiting its blossoms. It differs from the original, in the sepals and petals being of a yellow ground, almost completely covered with bright-brown blotches; the sepals are broadest, with three separate yellow stripes down the centre, while the petals have only one perceptible streak: the lip is likewise longer, and narrow at the extremity. It was obtained from the East Indies, and is growing under precisely the same treatment as the authenticated species, so that the colour is not to be accounted for by peculiar local conditions.

OPERATIONS FOR MARCH.

Markedly mild, and refreshingly stimulant to vegetable action, as has been a considerable moiety of the present winter, it cannot be reasonably expected that March will pass by without some exhibition of its accustomed rigour. The winters of Britain are now so generally extended beyond the spring equinox, that one of the greatest and most dangerous impediments to the satisfactory cultivation of all kinds of plants, is the occurrence of frost after their leafy expansion.

As the judicious culturist is ever on the alert to anticipate, rather than allow his stock to be subjected to the irregularities of seasons, particularly when warned by the mischief they have caused in previous years, we are not authorised to suppose that the promising earliness of plants' developments in the current period will escape the notice of our fraternity, or allay all apprehension for its consequences. Nevertheless, we must not refrain from cautioning the uninitiated class of inquisitive amateurs.

Whether in the plant-house or the open ground, every race of vegetable existences should, as far as can conveniently be done, be kept in complete subordination to the grower's wishes. This may be thought, by many, a thing impossible to be realised; but we shall show how, within certain bounds, it can be readily carried into execution. The prime condition on which it depends is the withholding all superfluous supplies of water, even to keeping the plant in a state ever bordering on actual want. If we have unequivocally and repeatedly pressed the necessity of withholding fluids in dull and wintry weather, because of the well-known inefficiency of solar light and heat to force them through the system, and furnish for them sufficient and appropriate outlets, we must here resume the same recommendations for very dissimilar reasons.

Although light and heat are not yet naturally provided to the requisite extent, there is enough of these to controvert any argument for maintaining a scarcity of water, which might be built on such grounds. It is the injurious check to protected plants which, according to the common series of seasons, will assuredly succeed, and the serious damage that may result to those freely exposed, on which alone we base our opinion, when we allege that liquids, unsparingly or too lavishly used this month, are great agents for evil. To express our whole meaning in one short sentence, we deem it much safer to let a plant look somewhat sickly for lack of liquid nutriment during the opening spring quarter, than to encourage its growth by a contrary course, and subject this to future incurable injury. Plants in houses or frames are the express objects of these remarks; but the benefits of the system may be communicated to all the smaller sorts of unsheltered border ornaments, by placing a layer of any substance that is impervious to rain over the soil that contains their roots.

Many exotics will require re-potting this month, and we cannot do better than point to the directions for shifting *Pelargonia* in a former page of this Number, as embodying most of the principles by which the operation should be universally regulated. Orchidaceæ, unlike the members of every other tribe, thrive best in a pot or other receptacle, large enough to hold the whole of the roots likely to be added in the ensuing year; only, where this plan is followed, more than usual attention must be devoted to the prudent application of water, otherwise it would prove prejudicial instead of congenial.

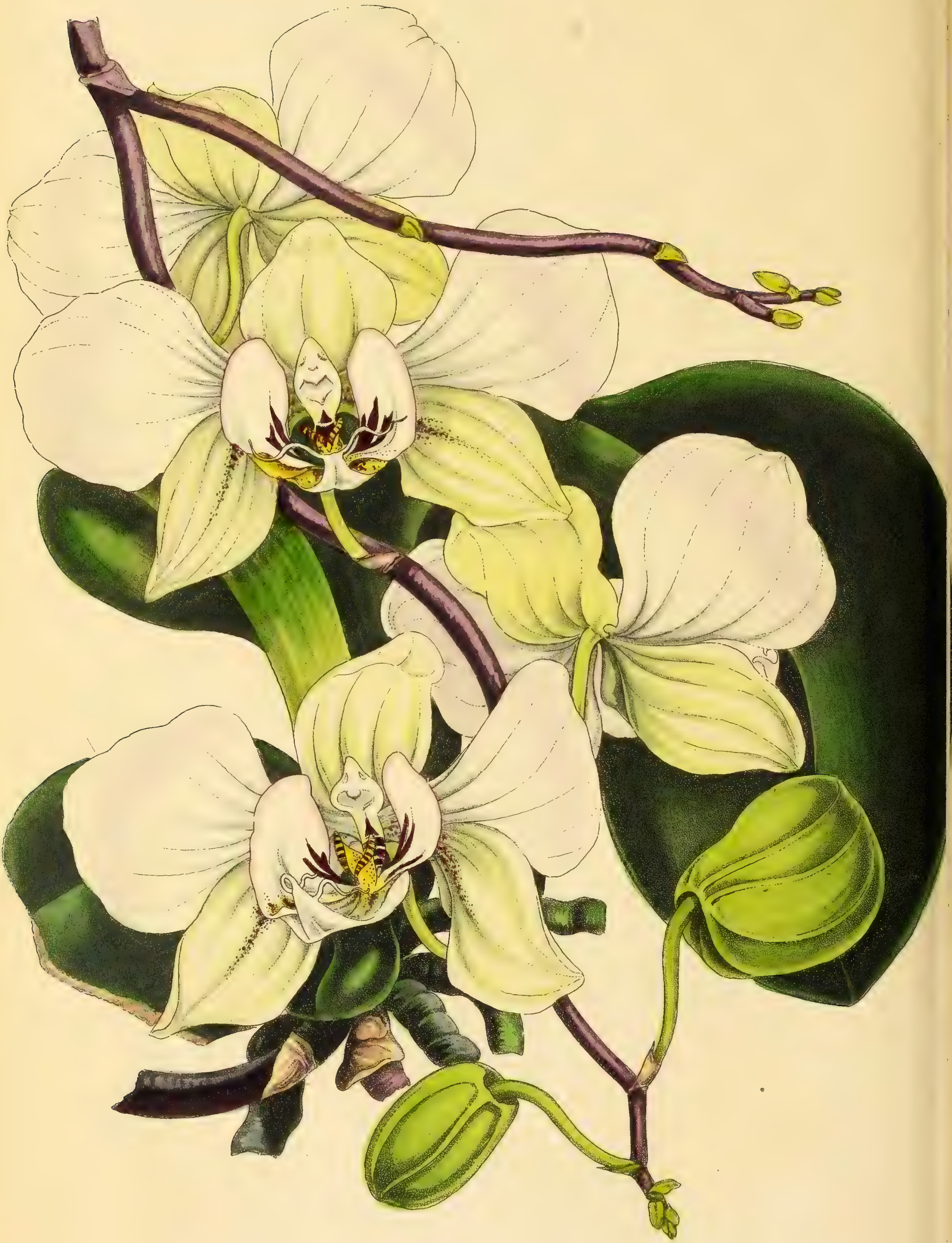
If the hints thrown out last month on the time of digging shrubbery borders have had the desired influence, these may now be turned over without delay. It should be stated, that we would not delay operating on those which may be meliorated by lying open to the air, or such as are of a very clayey composition. These are most properly dug in November. But all that have a light, mellow soil, can, with the greatest propriety, be reserved till March. If manure appears to be needed, it becomes a question of high interest whether the bone-dust, now so generally used in the processes of agriculture, is not, in every point, best adapted for floricultural purposes. In its employment, all the inconvenience and dirt that attend the barrowing, applying, and effectual burying of decayed dung, would be spared, and the ground in which it was mixed would be sensibly pulverized as well as drained by its dry non-adhesive qualities.

Herbaceous plants that have grown too large for the borders, must be separated at the time of digging. Probably every specimen will be included in this observation; for, if all circumstances are favourable, they usually need parting annually; and those which increase slowly will be advantaged by transposition to another spot. The practice of merely paring off the exuberant portions of common plants with the spade, and leaving the old original stock in the same situation year after year, is, though still adhered to by many gardeners, in opposition to every principle of reason and philosophy. Flowers, like culinary plants, demand a succession of crops on any plot of ground; or, in other words, the species must be yearly transferred to a new site, in order to preserve them from deterioration.

While the above rule holds good with all real species, it is pre-eminently applicable to hybrids. Pinks, Carnations, Polyanthuses, and numbers of others of greater rarity, are deprived of their valuable properties if always kept in the limited space which was first allowed them. Nature, constantly assiduous in providing for her more immediate subjects, furnishes each acknowledged species with the power of producing lateral and more or less remote offsets, which, penetrating a new and untainted earth, derive from thence fresh food, and go on spreading outwards each year with the same success. How truly absurd, then, of the cultivator, whose avowed aim is to improve on Nature, to nullify her struggles for release from an infected medium, and positively retain his plants in a worse state than they would enjoy if quite neglected, by cutting off, each winter, the only healthy parts of a perennial herbaceous species!

We hope soon to see the custom herein condemned wholly discontinued. When every herbaceous plant is yearly lifted, and replanted in a different spot, preserving the *outer* portions alone of those that are becoming troublesomely large, while the aged stumps are thrown away as worthless, our pleasure-ground borders will assume another aspect, and be little less attractive than those beds of the flower-garden whose ornaments are renewed as often as their flowers wither.

Preparing and planting cuttings of hardy shrubs, and adjusting layers, being very ordinary operations, have no claim on our present space further than the suggestion that the latter is to be effected while the digging is in progress. The sowing of annuals is of a like nature, and may be passed over with a mere allusion to the necessity of performing it in March.



Phalænopsis amabilis.

PHALÆNÓPSIS AMÀBILIS.

(THE INDIAN BUTTERFLY PLANT.)

CLASS.	ORDER.
GYNANDRIA.	MONANDRIA.

NATURAL ORDER.
ORCHIDÀCEÆ.

Generic Character.—*Perianth* conspicuous, spreading. *Sepals* free; *petals* larger, dilated. *Labellum* somewhat prolonged at the base, connate with the column, free, thick at the base, three-lobed; lateral lobes ascending, petaloid, middle one narrower, two-tendrilled. *Column* recumbent on the ovary, semi-cylindrical; beak gladiate. *Anthers* two-celled. *Pollen-masses* two, sub-globose, with a smooth spatulate caudicula, and a large heart-shaped gland.

Specific Character.—*Plant* an epiphyte. *Stems* simple, rooting. *Leaves* binate, oblong, coriaceous, radical. *Scape* a foot long, or more, many-flowered. *Flowers* large, white. *Sepals* oblong, obtuse; *petals* subrotund, clawed. *Labellum* with the lateral lobes ovate, obtuse, incurved, becoming yellow towards the base; thick near the lower end, but lessening from thence downwards, truncate, yellow, sagittate.

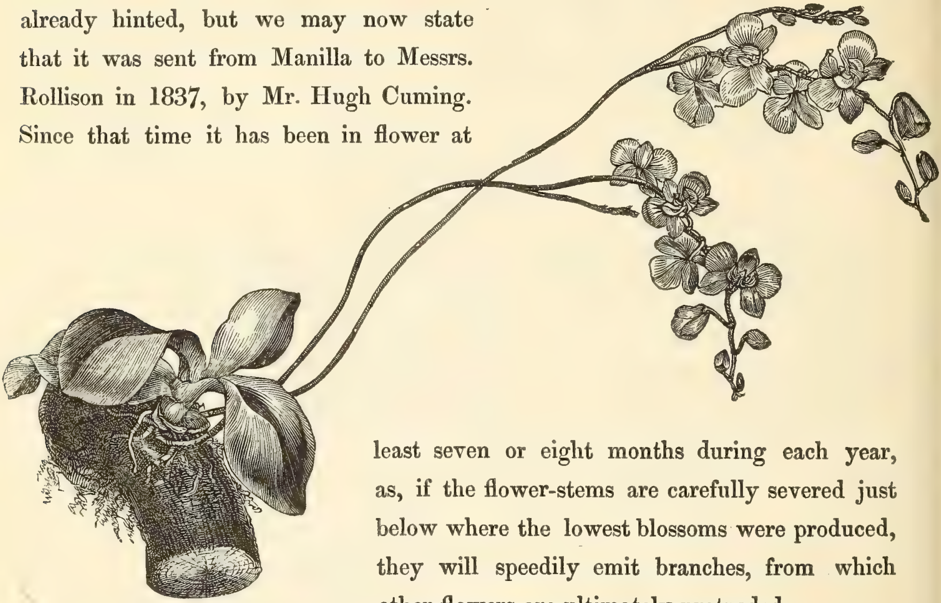
Synonymes.—*Angræcum album majus. Epidendrum amabile.*

Among the many subscribers to the expedition of Mr. Hugh Cuming to Manilla in quest of botanical curiosities, Messrs. Rollison of Tooting were alone fortunate enough to receive a living specimen of this exceedingly lovely plant. And though several packages have subsequently arrived from the same district, no collection is yet adorned with its superlative beauty, except that of the above gentlemen, and the very few which have been supplied by them.

Without at all considering its rarity, our subject may be pronounced one of the most interesting of the peculiarly rich tribe Orchidaceæ. In nearly all its characteristics it stands quite isolated, and yet these are of a description eminently adapted to command admiration. Novelty and the more enduring charms of real elegance are thus delightfully united, by their association causing an unusual degree of interest to attach to the object in which they meet.

Our very excellent drawing will contribute much to secure for the plant the reader's esteem, while the engraving may serve to show more plainly its particular habitude; but nothing can fully depict its real loveliness. It has not, like most plants of allied genera, an apparent ascending stem, for the leaves issue immediately from the same point as the roots. Its foliage is remarkably handsome, being short, broad, thick, by no means spreading, and always in a most healthy or luxuriant condition. The flowers are, nevertheless, its main attractions. They are borne on a half-erect, half-pendent spike, and are for the most part of the purest white, with an extremely singular labellum, the structure and markings of which are in the highest degree pleasing.

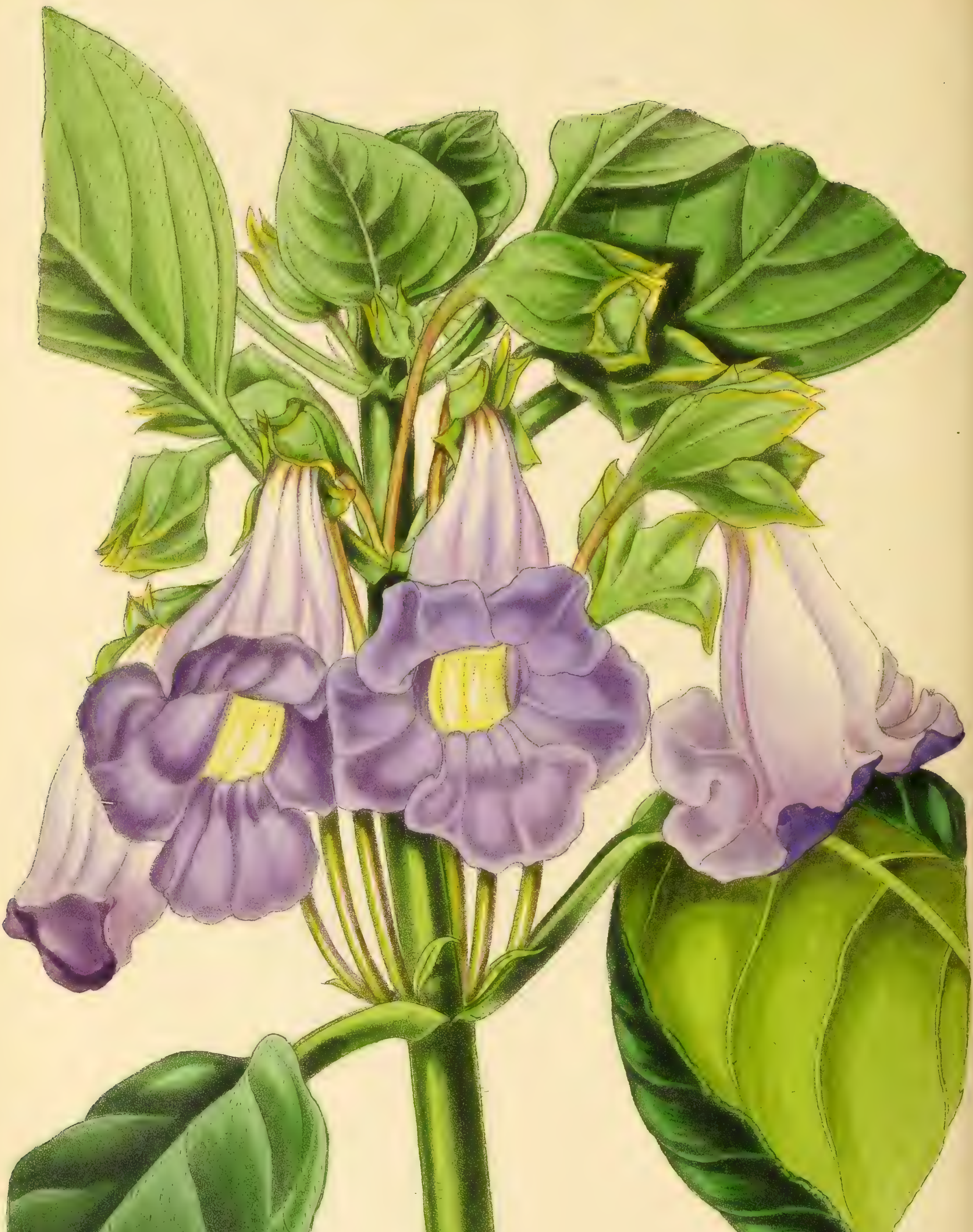
The source of this species has been already hinted, but we may now state that it was sent from Manilla to Messrs. Rollison in 1837, by Mr. Hugh Cuming. Since that time it has been in flower at least seven or eight months during each year, as, if the flower-stems are carefully severed just below where the lowest blossoms were produced, they will speedily emit branches, from which other flowers are ultimately protruded.



In conformity with our previous assertion that the habitude of an orchidaceous plant is generally an adequate guide to its treatment, the present plant palpably requires suspension from the roof of the house, on a block of either hard or partially decayed wood. A little moss may be placed over the lower part of its roots, in order to preserve about them a proper quantity of moisture, and it should be kept in a warm damp department.

Our artist prepared the drawing here given from flowers expanded in the Tooting nursery in the month of March 1839.

Phalænopsis is compounded from *phalaina*, a moth, and *opsis*, resemblance, owing to the supposed similarity of the flowers to some species of moth.



Sinningia Youngeana

SINNÍNGIA YOUNGEÀNA.

(DR. YOUNGE'S SINNINGIA.)

CLASS.
DIDYNAMIA.

ORDER.
ANGIOSPERMIA.

NATURAL ORDER.
GESNERIACEÆ.

Generic Character.—*Calyx* tubular, five-angled, with leaf-like wings, five-toothed at the mouth. *Corolla* usually two-lipped, with an inflated throat. *Rudiment* of the fifth filament inserted on the surface of the base of the corolla. *Nectary* with five glands, alternate with the filaments. *Fruit* capsular. *Capsule* rather fleshy.

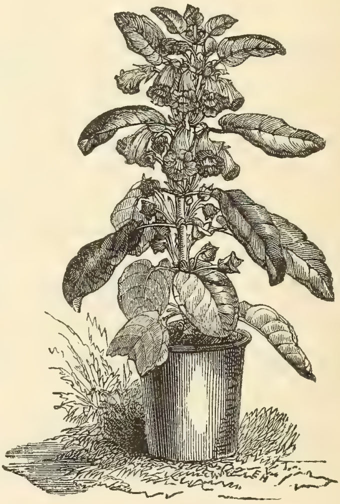
Specific Character.—*Plant* perennial, suffruticose, growing from one foot to eighteen inches high, covered in all its parts, except the interior of the corolla, with long glandular hairs. *Leaves* opposite, petiolate, oblong, crenate, revolute at the margins, acute. *Calyx* of five equal ovate segments, rather irregularly disposed. *Corolla* with five obtuse subequal lobes, light purple on the outside, dark within, spotted towards the base of the throat, and smooth.

It is a common but most mistaken opinion of gardeners and amateurs who devote little attention to botany, that no plants can, by hybridization, be induced to mingle their particular properties, unless belonging to the same genus. The fallacy of this notion is clearly proved in numberless instances, and the more inquisitive culturists are now aware that any two of the majority of plants associated in one Natural Order, will, if impregnated with each other, yield a produce intermediate between the parents, and partaking of both their natures. Still, it must not be imagined that this rule holds good universally; for in no case will it be found to issue in the wished-for results, except where the plants brought into connexion have a manifest affinity of habitude.

As a convincing example of the possibility of commingling the individual traits of species systematically placed beneath related genera, the superior *Sinningia*, of which a figure is affixed, may be most aptly adduced. It was originally generated by the impregnation of blossoms of *Sinningia velutina*, with the pollen from flowers of *Gloxinia speciosa*. Advantage has thus been taken of a fact too little known, to combine the subshrubby character of the *Sinningia* with the splendid purple colour of the flowers of a *Gloxinia*. The circumstance and its consequences are particularly gratifying, and should be carefully treasured in the cultivator's memory, as an excellent resource in similar cases, where the blooms of any otherwise ornamental plant are insignificant.

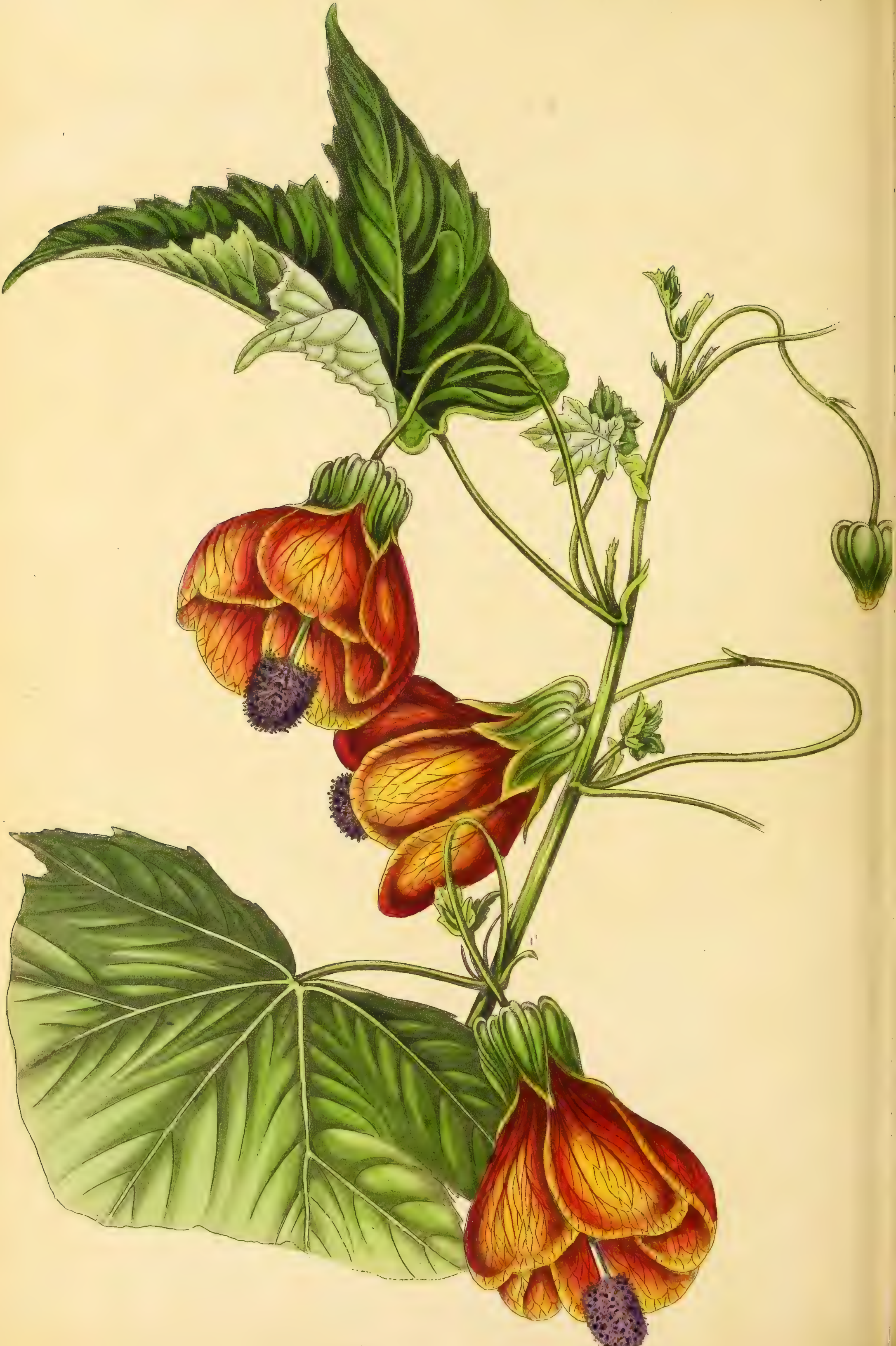
Mr. R. Marnock, while curator of the Sheffield Botanic Garden, raised this very showy plant about three years back. Passing from thence to the Botanic Garden at Birmingham, it has since reached Messrs. Loddiges, Hackney, in whose stove we have frequently admired its beauties, and through the kindness of these gentlemen we had the accompanying coloured delineation, as well as the succeeding woodcut, prepared in July 1839. It is a rigid, erect, succulent plant, not exceeding eighteen inches in height, and extremely liberal in its production of blossoms, which, as will be seen from the drawing, are of a large size, and a rich bluish purple hue.

In a communication obligingly sent us by Mr. D. Cameron, curator of the Birmingham Botanic Garden, it is described as "a very desirable plant, being a free bloomer, and requiring less heat than the genuine species of *Sinningia.*" This latter is an important consideration, and the plant would perhaps thrive in a house of a temperature lower than that generally maintained in the stove. It must be potted in a sandy loam, enriched with leaf-soil, or rotten manure, and be kept in a humid atmosphere, besides being freely syringed, in the growing season. During the winter; drought is essential to subsequent health ; but if spare specimens be retained in a constantly high temperature, they will flower through the early winter months, and by this means a novelty may be obtained at the simple cost of a trifling ultimate degeneracy. Such specimens can easily be destroyed when they have served their destined end, and replaced by younger ones.



An increase must be invariably effected by cuttings, which, though exceedingly juicy, may be struck with tolerable facility, if cautiously preserved from damp. They should be taken off in the spring, and planted in a very sandy soil, with the usual appurtenances of hand-glasses and bottom heat.

The genus was named by Nees, to commemorate W. Sinning, gardener to the University of Bonn, on the Rhine. Mr. Marnock applied the specific designation in compliment to Dr. Younge, superintendant of the Sheffield Botanic Garden.



ABUTILON STRIATUM.

(STRIATED-FLOWERED ABUTILON.)

CLASS.	ORDER.
MONADELPHIA.	POLYANDRIA.

NATURAL ORDER.

MALVACEÆ.

GENERIC CHARACTER.—*Calyx* naked, five-cleft, usually angular. *Style* multifid at the apex. *Carpels* capsular, usually bladdery, five to thirty, in a whorl around the central axis, one-celled, three or many-seeded, connected so closely together as to form a many-celled capsule, mutic or awned at the apex.—*Don's Gard. and Botany.*

SPECIFIC CHARACTER.—*Plant* a slender shrub, usually about four feet high, smooth, slightly branched. *Leaves* alternate, stipulate, sometimes rather cordate at the base, unequally divided into three or five acute lobes, and liberally but very irregularly serrated. *Flowers* axillary, solitary, with long weak peduncles, drooping. *Calyx* five-parted; segments ovate-lanceolate, acute, prominently nerved. *Corolla* campanulate, with five equal, roundish, obtuse petals, orange-red, richly veined with brownish-crimson. *Stamens* numerous, with reddish-purple anthers.

ORIGINALLY introduced to the Glasgow Botanic Garden by Mr. Tweedie from the Banda Oriental, and by Mr. Gardner from the Organ Mountains, this graceful species has latterly been transmitted to English collections, and been grown in those around London for nearly two years. It possesses a considerable share of sterling excellence, which resides chiefly in the splendid colours and pretty striping of its flowers, as well as the engaging manner in which they depend from the stems on their long slender peduncles; but cultivators too generally deem it a straggling plant, and unfit for ornamental purposes, on account of the weakness of its stems, and the great distance between the foliage.

Respecting the latter particulars, no plant has suffered more from inappropriate treatment. Although Dr. Lindley, in a passing notice of it in the Botanical Register, recommends a greenhouse as the fittest situation with regard to temperature, yet the greater number of culturists still keep it in a stove; and when, as a necessary consequence of their imprudent management, it assumes a rambling habit, they denounce it as an unsuitable species for common collections.

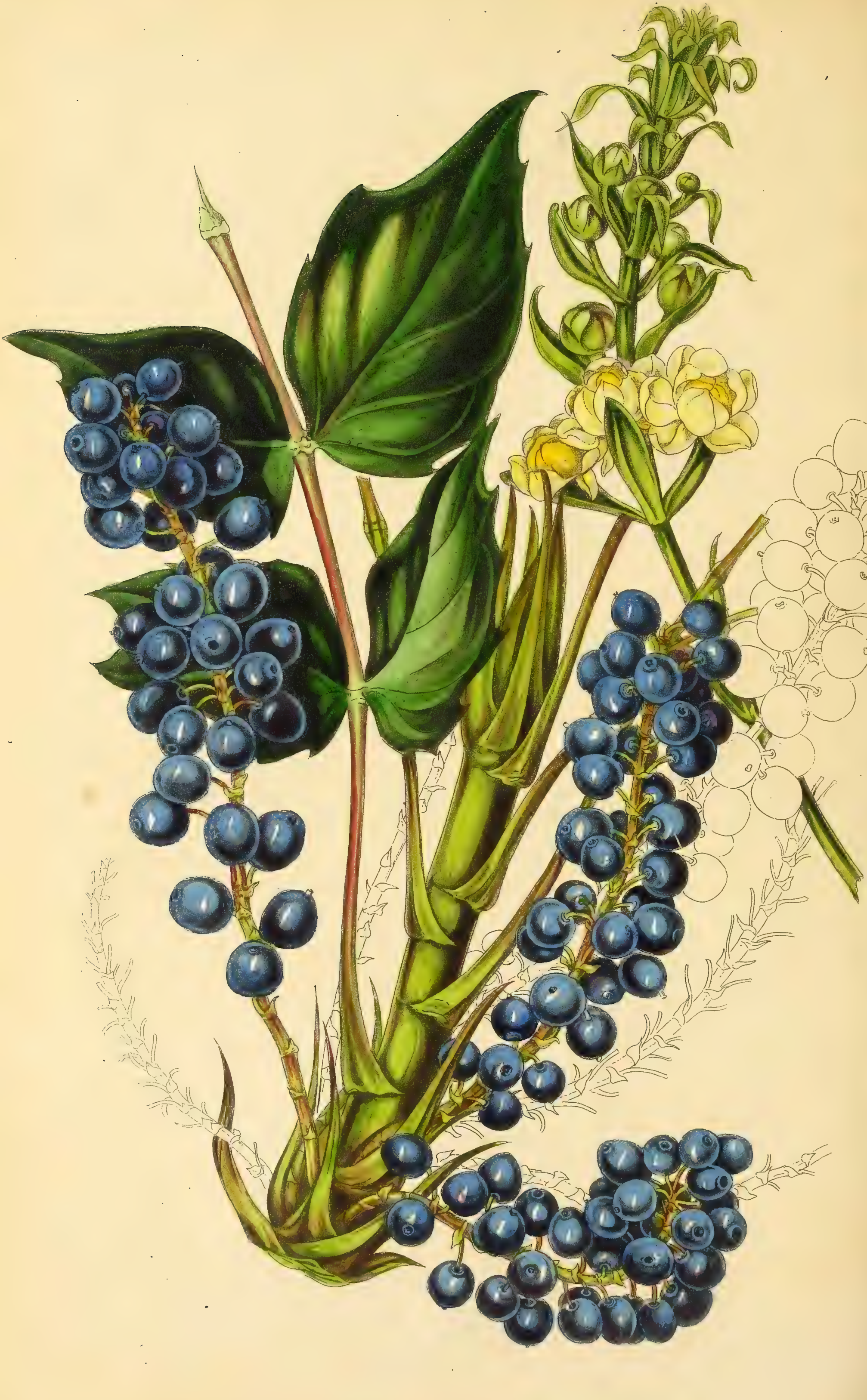
Having given some attention to the subject of its culture, we find that, in the nursery of Mr. Fairbairn, Clapham, a specimen stood in the open ground during the winter of 1838-9, without any protection, and with complete impunity. We saw the plant in question during the frost of last December, and it appeared in admirable health. This fact will render apparent the absurdity of growing the plant in a stove. In extensive places it may, notwithstanding, be occasionally treated as a stove plant, since, when there is an abundance of other specimens placed in the foreground, so as to conceal the bottom portion of its leafless branches, the fascinating flowers and light waving foliage will form a desirable relief to the eye from the ordinary sorts of tropical plants.

We would not be understood as positively commending the practice of transferring this species to the open air. Our design in producing the foregoing case is simply to demonstrate, from the fact of its maintaining a healthy habit in such a site, that the tenuity so much complained of results from excessive excitation, and is not a natural feature. We greatly prefer the greenhouse as a general receptacle for the present subject, because it would doubtless blossom better if sheltered from direct atmospheric influence. By retaining it in a cold house, it will bloom in almost all the more favourable months, and will continue to flower through even a large part of the winter in a stove, so amazingly prolific is its nature.

Cuttings must be prepared from those shoots which are most nearly ripened, as the very sickly sprays are too succulent to sustain, without rotting, the direct inbibition of water consequent on being planted independently in an earthy compost. They should be placed in shallow pots of very sandy soil, and these plunged in a gentle bottom heat, as well as covered with a small hand-glass.

Calling at Mrs. Lawrence's gardens, Ealing Park, in the autumn of 1839, we observed some beautiful specimens of this plant in a flowering state, and were courteously allowed to obtain the representation hereto attached.

The generic title is derived from the Arabic name of an undetermined member of the order *Malvaceæ*.



Mahonia glumacea.

MAHÒNIA GLUMÀCEA.

(GLUMACEOUS MAHONIA.)

CLASS.
HEXANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
BERBERIDÀCEÆ.

GENERIC CHARACTER.—*Sepals* six, guarded on the outside by three scales. *Petals* six, without glands on the inside. *Stamens* furnished with a tooth on each side at the top of the filament. *Berries* three to nine-seeded. *Don's Gard. and Botany.*

SPECIFIC CHARACTER.—*Plant* shrubby, evergreen, from one to two feet in height. *Stems* erect, short-jointed, covered with glume-like stipules at the base. *Leaves* with very long roundish petioles, densely arranged, pinnate; *leaflets* in five or six pairs, with an odd one, sessile, ovate, acuminate, with remote spiny serratures. *Racemes* long, ascending. *Flowers* pale yellow. *Berries* deep blue.

SYNONYMES.—*Berberis nervosa. Mahonia nervosa.*

EVERGREEN flowering shrubs, whether of a stove, greenhouse, or hardy class, are, of all others, the most valuable. When nature is clothed in her summer livery, their foliage loses nothing by comparison with the fugacious verdure of their deciduous congeners; whereas, while the latter are denuded and unsightly, they appear to revel in the greatest luxuriance, and rob the winter of half its actual rigour.

But while the above observations embrace evergreens of all kinds, they are especially applicable to the hardy shrubby species. The contrast between them and the surrounding vegetation is greater, and the incentives to our regard are, on this account, much more potent. These plants are, moreover, increasingly interesting in proportion to their dwarfness; as, the smaller they are, the denser, of necessity, is the disposition of their leaves, the more uninterrupted the display of their greenness, and the closer do they assimilate in form to the most exquisite deciduous flowers of summer, thus affording a more striking exhibition of difference.

We have noticed with pleasure the immense demand made during the last few years for the evergreen species of *Berberis* and *Mahonia;* for we decidedly consider them among the most ornate shrubs of that description. To give a stimulus to the culture of such plants which appears to us yet wanting, we have determined to represent several of the best species in a stage at which they have hitherto been insufficiently observed. We allude to the period when their fruit is produced and ripened.

The berries of some species of these genera seem to us to possess peculiar attractions. With the inimitable deep blue colour of the grape, and the fine powdery *bloom* which is so much desired on that esteemed fruit, the berries of our present plant are likewise produced in long close spikes, and their beauty and abundance are such as almost to tempt the beholder not to rest satisfied with ocular examination. Their taste, however, is flat, acid, and disagreeable.

M. glumacea is a rather unique species. It grows very dwarf, has exceedingly long foliage, which, with the numerous spikes of flowers, and the berries by which they are succeeded, all issue from a few inches of the stem, and create a close, but, owing to their loose disposition, by no means a crowded appearance. The pretty pale yellow flowers are first developed in the months of May and June, and the fruit is matured about the end of July, remaining perfect for more than a month. After this, flowers are again borne in October and November, but these of course prove abortive.

It endures the winter in the Epsom nursery, whence we procured our figure in July last, without any artificial protection, merely being planted in a spot very partially sheltered. The foliage assumes a rich purple tint in the autumnal months.

Messrs. Young propagate it by seeds, which are sown in the autumn, either in pots or the open ground, and transplanted when the plants are three inches high. A light rich loamy soil suits both seedlings and established plants, and they will probably need a slight covering in extremely severe weather; at least, it will be prudent to supply this when frosts are violent.

Mr. Nuttall separated this genus from *Berberis*, and named it in honour of Bernard M'Mahon, a patron of botanical science in North America.

The specific appellation has reference to the singular glume-like processes situated around the lower part of the stem.

ANALYSIS OF SOILS.

We resume this subject at the point where we closed our previous remarks, No. 73, p. 10. In considering *humus* as the basis of vegetable nutriment, we follow the bent of other writers, who, however lucid their theories may be to their own minds, fail to bring conviction to the understanding of others. *Humus* is a newly-appropriated Latin word, which strictly means nothing more than the *earth or ground—mould:* therefore the term is improper—a falsification; for, strain the sense hard as one may, it is impossible that *humus*, *humi*,—the ground,—can be made to apply to that black, perfectly reduced substance, of an old dung-mixen, or mass of fermented vegetable matter which is used as manure.

Our philosophers describe *humus* (which, they say, is "produced by the slow decay of animal and vegetable matter") as "a dark, unctuous, friable substance, nearly uniform in its appearance,—a compound of oxygen, hydrogen, carbon, and nitrogen,—found in the greatest abundance in rich garden mould, or old neglected dunghills,—a product of organic power, such as cannot be compounded chemically.

"It is the product of living matter, and the source of it. It affords food to organization: without it nothing material can have life. In the state in which it is usually found in the earth, it is not soluble in water, and we might have some difficulty to comprehend how it enters into the minute vessels of the roots of plants; but here the admirable provision of Nature may be observed. Humus is insoluble and antiseptic; it resists further decomposition in itself and in other substances in contact with it. It remains for a long time in the earth unimpaired; but no sooner is it brought into contact with the atmosphere by the process of cultivation, than an action begins. Part of its *carbon* uniting with the oxygen of the atmosphere, produces carbonic acid, which the green parts of plants readily absorb; while its hydrogen with the same forms water."——"The residue forms a *soluble extract*, and in that state is taken up readily by the fibres of the roots."

Here then we have a concise view of the "*humine*" theory, a compendium of all that has been written concerning humus or humic acid,—in plain terms, of the existing philosophy of manures obtained by the analytic experiments of the laboratory. We will sift this theory a little; for, while perceiving a great deal of inductive truth in it, we cannot fail to detect some hypothetic fallacies.

We deny the correctness of the term *humus* in the abstract; for *black spit-dung is not earth;* yet we will, for the sake of conciseness, leave it without further comment, provided it be clearly understood that the substance so called possesses nothing in common with the earths proper, to which it is only applied by art as an adjunct, or into which it enters by the natural processes of vegetable decay. It is readily admitted that native loams, and soils in general, contain fibrous or other matter convertible into humus; but we contend that these decomposable matters are adventitious—the products of vegetation, on the spot or remote, as the case may be, but in no degree constituents of native earth.

Humus has been analyzed by Fourcroy, Davy, Chaptal, and Th. de Saussure, and treated of by numbers of their followers: hence we learn that certain elements have been revealed, which by no human art (it is avowed) can be again combined, so as to effect its *re*-production. An agency therefore is wanting; a link is broken, that is lost and cannot be discovered: and, consequently, the nature of humus (manure) is not perfectly understood.

Humus, we read, is insoluble; but no sooner does cultivation commence, than the *air* acts upon and decomposes it: one part it converts to carbonic acid, (carbon with oxygen,) another part to water, (hydrogen with oxygen,) leaving the remainder of the oxygen, hydrogen, carbon, and nitrogen in the condition of a "soluble extract," now capable of being conveyed into the absorbent vessels of the roots. This passes glibly from the pen, and reads well; but the reader may be assured that the processes—the great natural phenomena—so detailed, have not been traced *in the laboratory of the chemist*, or investigated under the surface of the soil within the immediate range of the vegetative vital principle; they are pure inferences.

We will not affect to deny that carbonic acid has been detected, and its absorption witnessed during experiments under inverted glasses, or by a pneumatic apparatus; but we contend that the great laboratory of nature remains unexplored, that the entrance to it is barred, and that all the analytic experiments of the chemist upon living beings or their functions are subversive of nature, and tend at least to partial, if not to delusive conclusions. Vegetables decompose manures (humus) if properly prepared by incorporation with earth suitable to their several habits, by the energy of their vital principle; and they thus impoverish land by depriving it of those manures, depositing, however, fibrous or other matter of their own in it. Hence, land always contains decomposable substances which partially enrich it for a cross, or *rotation crop*, but deteriorate or poison it for any individual species. But the native earths are unchangeable; clays remain clays, sand sand, and so on; and though a minute portion of each earth may be assumed by plants, yet its quality remains unaffected.

We now contend that *humus* is neither more nor less than manure: its analysis has proved the great fact that it is entirely decomposable; but beyond that, we can only infer that plants decompose it, and appropriate its elements according to natural laws.

The analyst of soils therefore will not misapply his time and energies in adopting Mr. Rham's mechanical method of investigation, which we now again advert to. He directs that metallic sieves of different fineness be provided, and gives a drawing of a compound vessel to facilitate the operation of sifting. Thus "sieves may be made so as to fit into one another like the filterers in a coffee-biggin, the last fitting into a tin pot which will hold about a pint of water, a cover being made to fit on the top sieve." Sieve 1—the uppermost—is made of a perforated tin plate, the holes about one-twentieth of an inch in diameter. The largest particles or stones are retained by this sieve, and the remainder is successively passed through two or three more sieves, increasing in fineness to the last, which is of the finest wire-cloth, having from one hundred and fifty to one hundred and seventy threads in an inch : whatever passes through this is an impalpable powder.

By this simple method any soil previously dried, as before directed, is separated into four distinct parcels; but to render the separation more complete, our author instructs us to apply his compound cylindrical sieve in the following manner :—All the siftings may be done in one operation, by placing the dried earth in the upper compartment,—having previously pulverized any remaining lumps of the earth. "The coarser sand must be washed with pure water to detach any fine dust adhering to it; what runs through may be used to wash No. 2 (from the top) in the same manner, and then may pass through No. 3 to the impalpable matter which passed through all the sieves. A sufficient quantity of water must be used to render the whole of this last nearly fluid. There will be three different portions of the washed soil left in the sieves, and a portion of impalpable matter diffused through the water in the lower division of the instrument."

This fine matter is to be well shaken, and suddenly poured into a deep glass vessel, and permitted to settle till the heavier sand subsides; and then the light, floating soil is to be cautiously poured off into another vessel. This washing may be repeated till all the sand of which the particles are visible to the naked eye is separated. But it is correctly observed that a little practice will enable a skilful operator to effect this at one operation.

We must defer our notice of those parts of the essay which approach to a chemical analysis, and shall conclude with one more quotation. In order to detach the *humus*, "the earth and water decanted out of this last vessel are poured into a glass tube eighteen inches long the bore of which is less than an inch; one end is stopped with a cork, and the other has a small lip for the convenience of pouring out the contents." In a short time an earth, chiefly *alumina*, will be deposited. What remains suspended in the water is to be poured off into a similar tube; and this fluid "will contain nearly the whole of the *humus*, which will take some hours to be deposited in the form of a fine brown mud."

(To be continued.)

CULTURE OF PELARGONIUMS.

(*Continued from page* 36.)

Besides attending promptly to the elevation of this tribe to the light, and the transparent texture of the covering which intervenes between them and the air, their sufficient distance from each other, so as not to have any of their branches or leaves brought in contact, must not be forgotten. Their verdure is deepened, their elongations matured, and their ensuing as well as more remote fertility promoted, by standing in a free current of air; which cannot act upon them beneficially if cumbered by the too great proximity of their neighbours. They will even derive advantage from being totally exposed at those times during which the atmosphere is calm, and the sun not excessively bright.

Water, liberally applied, is, as a companion of solar influence, next in value throughout the progressive state. If the desired dwarfness, so necessary to beauty in these objects, is properly obtained, the supply of liquid to the roots may be much lessened, the shade of the leaves and shoots admitting this diminution. But, presuming this happy consummation unrealized, the best way of watering Pelargonia is with a syringe. They should be nightly drenched through the medium of that instrument, to any amount that the season may warrant. The method inculcated is far more congenial than the ordinary practice; not only abstractedly, on account of its nearer assimilation to the rains and dew which Nature provides for their sustenance, but likewise because it washes from the leaves—those recognised channels of respiration, and media of concoction—all the dust and other matters which are apt to accumulate thereupon, and enables them rightly to fulfil the functions for which they are destined. Still, whenever such an application would be injudicious or injurious, or where syringing alone does not satisfy the plants' wants, it will be both prudent and necessary to pour water at once on the soil.

The foregoing hints may serve to govern and direct the daily tendance required for the subjects of this article, till their blossoms are partially disclosed. On their arrival at that condition, they may be transported to a greenhouse, where, if not mingled with other plants, a slight shading should be furnished to them as soon as the first flowers are fairly opened. They will not, it is true, be materially defaced, or their blooms destroyed much earlier, by the neglect of this precaution; but those who wish them preserved in perfection till their innate loveliness is quite exhausted, will not despise or disregard such a measure.

After flowering, they have to undergo a total transformation. Their branches are to be shortened, their roots trimmed, and every specimen planted in a much smaller pot, to be placed in a warm moist atmosphere for several weeks. To many of our readers, this practice may seem not a little singular. Let us then state its occasion and consequences.

Were the stately specimens which a summer's growth—induced by all needful nutriment, and the added assistance of every device which ingenuity or practice can add—has reared, left untouched, to resume their developments at the natural period, we should have, instead of small elegant plants, ungainly, monstrous, straggling shrubs, fit for nothing but a place in a garden plantation. Nor would this be the only evil of such a course. The moment that these artificial plants—for such, strictly speaking, they really are—were permitted to stretch beyond the bounds prescribed by the art which gave them birth, they would fall back into the character of their progenitors, and lose all those dazzling traits which have hitherto held us in admiration.

In this remarkable propensity, we see plainly indicated that while man may improve, indefinitely, any natural object, he cannot set a permanent impress on either the most insignificant or the most splendid things. Thus, if we relax in our attentions to hybrid plants, and deny them the fostering influences under which they were raised, the production which had taken years to perfect may return to worthlessness in a few months.

Beyond, however, the dictates of necessity, there are motives of expediency which impel us to reduce our Pelargonia annually. Were it not for this, they would become too large and troublesome, and in two years no pots would be found capable of containing them, or a house of moderate size that would hold more than a few dozens. Their beauty, independently of the flowers, consists likewise in a dwarf symmetry of form, which is violated on their reaching a greater height than a single year's growth exhibits.

All these considerations, jointly operating, have given rise to the practice which we are about briefly to delineate. On an early occasion, posterior to the decay of the final flowers, each shoot should be cut down as low as one or two inches from the central stem. The autumnal, or late summer season, is chosen for this pruning; because the plants thus headed down have time to emit new shoots, and compose the germs of future blossoms, before the inclemencies of winter. But it would be of little avail to reduce the superior portions of such plants, if the roots were not proportionally curtailed. And hence it is incumbent, on those who prune, to attend to this particular also.

Lest immaturity of wood should frustrate the wishes of the cultivator, and leave his charge in a tender condition at the very outset of the winter which he had been preparing them to sustain, a trifling extra heat is created in the frame to which they are consigned, when severally planted in the smallest pots that will admit them. It is easy to raise this desired heightening of temperature by erecting a thin coating (by gardeners erroneously termed a *lining*) of fermenting manure around the frame. Nothing could be more suitable than the latter material, as, with the requisite heat, it will engender a fine genial moisture of the precise kind wanted.

While luxuriating in an atmosphere so peculiarly adapted for eliciting new developments, the auxiliaries of watering and syringing must duly accompany the external excitation. No renewal of the manure will be demanded, and its heat can be suffered gradually to subside.

To draw these suggestions for the summer culture of Pelargonia to a close without omitting any matter of consequence, we would observe that the growth, stimulated as above shown, and which will not be more than three or four inches in length, must be partly finished ere winter commences. Every effort should therefore be exerted to effect that end. The daily elevation of the frame-lights to a degree greater each day than that of the preceding, and, ultimately, their complete removal in propitious weather, will soon, and by supportable stages, inure them to their advancing torpidity, and impart that consistency of frame and substance which is so essential to their maintenance in vigour. With the reduction of temperature, there must necessarily be a corresponding diminution in the allowance of water; and this is decidedly the most important part of the autumnal treatment.

We have now to register some information on the winter management and propagation of the group; but as too much room has already been devoted to its consideration, these particulars will form the foundation of another paper, to which will be appended the notice of other matters referred to at the beginning of the former dissertation.

GENERAL TREATMENT OF THE GENUS PINUS.

The beauty and value of this deeply interesting tribe have only latterly begun to be appreciated in Britain. For many years, our countrymen had accustomed themselves simply to regard those vegetable objects ornamental which exhibited at some period of their growth a profusion of gaudy blossoms; but this taste is now greatly ameliorated, and symmetry of form, with general elegance of habitude, is reckoned a sufficient key to our esteem, particularly with evergreens.

The species of *Pinus*, considered solely as embellishments of the pleasure-grounds, possess much to recommend them to our notice. Their charming, spiry shape—airy, graceful, and well-disposed branches—and the pleasing abundance and feathery form of their minute, but pretty, and constantly-green foliage, have each a claim on our attention, and severally beget those agreeable emotions which, when united, constitute the feeling of attachment now almost universally evinced. But there is a higher aim to which the introducer and cultivator of these noble plants aspires. Large tracts of our favoured father-land are yet comparatively waste, from the proceeds of their tillage being inadequate to the expenditure; or, from their peculiar locality and singular soil, altogether forbidding the ordinary methods of culture. We refer to the hills and moor-land in the north, and various similar positions farther south.

To "set the pine and the fir-tree in the desert," and clothe the barren hills with wealth and grandeur, is surely an end worthy of the most unwearied assiduity; and we indulge the expectation that when the hardier species of *Pinus* become naturalized, they will be found more than sufficient to accomplish so desirable an object. With the original rearing and after-culture of the kinds at present in our gardens, we have now to deal; considering that, besides the absolute necessity of attention to those specimens already in our possession, the anticipated and more remote results above touched upon must be preceded by the institution of a regular routine of appropriate treatment.

In penning a few hints on the culture of this genus, we are first called upon to discuss the subject of seed-sowing, and the management of seedlings. This is a matter of most vital moment, since no success in acclimatation can reasonably be hoped for if the requisite habit and degree of hardihood be not early engendered. Whether the seeds are ripened here, or imported from their native districts, they should never be germinated in a hothouse; for, although nurserymen too often raise them in a stove or hotbed-frame, on account of their natural wish to bring them to a saleable state in the least possible time, the practice is most injudicious, and such specimens seldom prove at all robust.

After carefully detaching the seeds from their cones, they must at once be sown in shallow pans or flats, which can be manufactured for this and analogous purposes, as none must be so used without they have a number of moderate-sized perforations in the bottom. The chief error in raising Pines from seeds, is neglect of proper drainage to the pots in which they are sown; many persons employing common flower-pot flats, which, having no apertures for the dispersion of fluids, retain a quantity of stagnant water perpetually in the soil, and inevitably destroy either the seeds or seedlings.

Much also depends on the choice of soil. All heath-mould, or anything assimilating thereto, must be wholly discarded; a light maiden loam, with which a large portion of white sand has been mixed, being incontestibly the most congenial. Over the potsherds placed at the bottom of the pan, one or two handfuls of broken sandstone may very properly be introduced. When the seeds are sown on the soil thus described, and covered very lightly with the same compost, a trifling watering, through a fine rose, can be administered, and the pans then removed to a cold dry frame, to which light has free admission.

From the time of sowing, till the vegetation of the seeds, the chief point is to secure a fit degree of moisture for softening and expanding the seed-lobes, and stimulating the embryo to elaborate its leaves and roots; but never to allow so much to accumulate as would cause decomposition. Of all the dangers incident to the incipient plants at this uncertain period, that from redundant fluid is the most imminent. To adapt the condition of the air as far as practicable to their wants, they should be confined to a small pit or frame, from which all external atmospheric agents must be excluded, a trifling moisture being preserved by occasionally pouring a little water on the floor. This will be preferable to watering the soil, so long as that can be avoided; and when the latter operation is indispensable, it may be cautiously performed.

On the slightest inclination to development being detected, aerial humidity should be promptly suspended; and by the time the seed-leaves have pierced the surface of the earth about three days, the young plants are instantly to be potted into the smallest sized pots, placing one specimen in each, and using the soil before mentioned. They may thereupon be transferred to a different frame, slightly shaded, and attentively observed for the succeeding fortnight; afterwards gradually exposing them to the open air by day, or during propitious weather, and closing the frame each night to guard them from cold and dews.

In that stage of their advancement between the first potting and being thoroughly habituated to exposure, they are more delicate and susceptible of damage than at any other part of their existence; this tenderness having reference principally to their contact with water. Of course, where heat is furnished, the liability to detriment is very much increased. Particular pains should, in consequence, be taken to have them so beneath the strictest supervision, that neither moisture nor temperature can reach them to any injurious extent.

Similar care, and in all respects the same management, are needful till the plants are on the point of emitting their proper leaves, when they must at once be transplanted to the spot prepared for them. In the interim, they may very likely require shifting into larger pots, or the frame to be covered with mats in the winter, or other necessary tendance, which will naturally suggest itself, and need not here be particularized. If, again, the seed is not received till the autumn or winter, although it is better to commit it directly to the soil, it should not be in any way excited to germinate, but the sole endeavours of the cultivator restricted to keeping it alive, yet dormant, until more genial influences can be ensured.

As a means of overcoming the difficulties opposed to the diffusion of this tribe by the total want of seeds consequent on the smallness of our specimens, and our intercourse with their native countries being so fluctuating, British skill has been brought to bear on the subject, and great numbers of the rarer kinds are now increased by grafting. It is much to be wished, however, that the leading members or patrons of the profession would rather specially appoint collectors to gather seeds, than perpetuate that system; for grafted plants never flourish so healthfully, nor maintain their distinctive characters so well, as those produced by semination. The essentials to success in the grafting process are terminal shoots for scions, a practised operator, and a close frame in which to store the plants while the junction is being effected. It may be entered upon in the month of March.

The time, situation, and soil for transplantation, next demand deliberation. In our opinion, April or May is the only proper period for the removal of Pine-plants to the open ground. When planted earlier, they are necessarily subjected to frost; and if the operation be deferred till autumn, precisely parallel results will follow.

It is quite a mistake to suppose that a low spot, much secluded from violent winds, is a favourable position for a Pinetum. On the contrary, if their natural habits are consulted, it will be seen that they love to grow on those elevated sites where gales are exceedingly frequent, and where they are ever kept in either a gentle or tumultuous agitation. A rather steep, but not too precipitous bank, facing the south and west, while, by consequence, the northern and easterly winds are considerably warded off, seems to us to present a situation as perfectly suitable as can well be conceived. Nor is this suggestion based on their native locality alone: we have witnessed plants so placed luxuriating in greater vigour than we ever elsewhere observed.

Regarding soil, the usual practice of supplying a compost of loam and heath-mould, or even one in which fresh loam is the sole apparent constituent, is not founded on experimental data. Between the species of *Pinus* proper, and those detached by many botanists under the names of *Picea* and *Abies*, there should be some distinction on this head. The members of the former class have, generally, fewer roots, with a much less disposition to form fibres, than the plants of the two latter divisions. They therefore require a more adhesive earth. But the species of *Abies*, and all whose habits bear any approximation to them, thrive most steadily and securely when a copious quantity of sand exists in, or is added to, the soil in which they are placed.

Of the accuracy of the foregoing statement, we have had the most demonstrative proof, and may further remark, that a very *superficial* stratum of suitable earth is equally advantageous, provided the sub-stratum be of a rocky nature. An under layer of sandstone, with a superincumbent mass, about eighteen inches or two feet in depth, of loose sandy loam, in which portions of the lower stratum are sparingly mingled, is a fair model for the grower of Pines, and his success will be commensurate with the extent to which these conditions are maintained or departed from.

Many modes of protecting the tender species of *Pinus* might be exhibited, each of which has probably a separate recommendation; but as almost every individual has a system of his own, it would seem invidious to detail or praise any particular method. We can merely allege, that if during the processes attendant on rearing the young specimens, their after hardihood is kept prominently in view, and no excitement afforded them which will at all endanger or diminish that pre-eminent desideratum, much of the expenditure at present bestowed on shelter may be wholly dispensed with.

FLORICULTURAL NOTICES.

NEW AND RARE PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR MARCH.

Barnárdia scilloìdes. Those who are fond of dwarf bulbous plants, have, undoubtedly, an attachment to the beautiful species of *Scilla*, and will therefore be equally gratified with a genus like the present, which is so closely related. This charming little plant is said to grow nearly a foot high, with long narrow leaves, and erect racemes of pretty pale purplish rose-coloured flowers. It is a native of China, and seems to have been first imported by Mr. J. D. Parks from the neighbourhood of Macao. We presume it is a half-hardy species, but one which will possibly succeed in the open ground if strict attention be paid to the avoidance of too much moisture. *Bot. Mag.* 3788.

Cèreus leucánthus. Dr. Gillies, who originally found this handsome plant in Chili, and sent specimens to the Horticultural Society, placed it beneath the genus *Echinocactus;* but Dr. Lindley, following a Continental botanist, has ranked it with *Cereus.* It has evidently the usual habit of the former genus, if conical ribbed stems and clusters of long spines on their edges are to be esteemed its characteristics. It blossomed for the first time at the Horticultural Society's garden in 1831, but flowers produced in 1836 were much finer. The spines are long, of a greyish colour, and situated on a tuft of brown wool, which ultimately disappears. The species bears very noble flowers, these being solitary, six inches in length, white, tinged with pink, in the inside, and olive-green on the exterior. There is a considerable crest of wool on the summit of the plant. *Bot. Reg.* 13.

Gesnèria cochleàris. The principal peculiarity of this new species, is its concave, spoon-shaped foliage. Its blossoms are likewise solitary, and opposite, with a nearly regular five-lobed corolla. It grows about a foot and a half high, having simple herbaceous stems, large ovately cordate, crenated, and hairy leaves, and moderate-sized red flowers, slightly striped with yellow in the mouth. Mr. Gardner discovered it on the Organ Mountains, and despatched roots of it to the Glasgow Botanic Garden in 1837, from which flowers were obtained in June 1839. It thrives in the stove, treated as the rest of the genus. *Bot. Mag.* 3787.

Gonolòbus híspidus. A most curious plant, "no less remarkable for its dark, lurid, purple-coloured flowers, of a peculiarly thick and coriaceous texture, than for its powerful fragrance, resembling more that of freshly-ground roasted peas, but highly concentrated, than anything else to which we can compare it." The stems are weak, with a tendency to climb; the leaves cordately-ovate and acute; and the flowers appear in large bunches from the axils of the foliage. It reaches the height of four feet and upwards, and having bloomed in the Glasnevin Botanic Garden, Dublin, in July 1839, is considered a "half-herbaceous plant," with the probability of proving hardy enough to be planted against an exposed south wall. Mr. Tweedie found it in dry spots among withered grass at Entre Rios, South Brazil. *Bot. Mag.* 3786.

PHLOGACÁNTHUS CURVIFLÒRUS. For this magnificent shrub, British collections are mainly indebted to Dr. Wallich, superintendant of the Calcutta Botanic Garden. From plants communicated by this gentleman to the rich collection at Woburn Abbey, and primarily collected by Mr. de Silva on the mountains near Sylhet, flowers were abundantly protruded in November 1839. Four to six feet is the common height of the plant, its leaves often being a foot long, of an elliptical form, and triflingly crenated, with the midrib and the young shoots of a reddish hue. The blossoms are collected into a compact terminal raceme; they are individually nearly two inches in length, of a reddish yellow colour externally, paler within, and tipped with green while in a young state. It is cultivated in the stove, and most likely requires a rather rich soil. *Bot. Mag.* 3783.

RIGIDÉLLA FLÁMMEA. There is a degree of graceful as well as more intrinsic beauty about this entirely new plant, which must attract the attention of every lover of flowers. The old *Tigridia pavonia*, though its blossoms are much larger, has scarcely more real charms. "It grows from three to five feet high, with broad equitant strongly plaited leaves, which are dilated at the base where they sheathe the stem. The flowers grow in a dense umbel from within a two-valved spathe, and open singly day by day; they are drooping, and of a bright flame colour, with a campanulate tube, and a reflexed limb strongly marked at the base with short deep purple stripes." The pedicels, though drooping till the flowers have decayed, then become rigidly erect; hence the generic name. It was found by Mr. Hartweg in Mexico, and transmitted to the Horticultural Society, in whose garden it is cultivated similarly to *Tigridia*. *Bot. Reg.* 16.

SATÝRIUM PUSTULÀTUM. One of the prettiest of terrestrial Orchidaceæ, on account of the lively colour of its pink blossoms, which are also neatly spotted. It is not new to this country, but has lately been brought from the Cape of Good Hope by Sir John Herschel, who describes it as growing in "*clay*, baked by the sun nearly to the consistence of a brick." Much heat, light, and, during the flowering season, as also afterwards, until it again begins to grow, a great degree of drought, are considered essential: but a cold frame, thoroughly exposed to the sun at all seasons, will be found perfectly suitable. The soil for it in Britain must be a sandy heath-mould and decayed leaves. *Bot. Reg.* 18.

SOLÀNUM UNCINÉLLUM. Specimens of this plant flowered in the garden of the Horticultural Society in July 1837; but having since been destroyed by frost, its history cannot now be obtained. "It is a pretty decumbent pink-flowered herbaceous plant, perhaps an annual, and appeared very different from anything in the collections of this country." The chief character by which the blossoms are distinguished, is the small hook at the extremity of each petal. It is not distinctly stated that the plant is now lost to English gardens, but we believe we are warranted in assuming this to be the fact. *Bot. Reg.* 15.

Spiræa vaccinifòlia. This is an interesting little *Spiræa*, of dwarf habits, bearing agreeable foliage, and large panicles of small white flowers. The plant was introduced from Nepal by Professor Royle, "who presented its seeds to the Horticultural Society in the year 1835. It is a very pretty species, almost as hardy as the Gueldres Rose, its branches having been little injured even in the severe winter of 1837-8; it grows from one to three feet high, prefers an American border, and strikes freely from cuttings of the half-ripened wood." There are two varieties of it at the Chiswick gardens, one of them more slender and diminutive than the other. *Bot. Reg.* 17.

NEW, RARE, OR INTERESTING PLANTS IN FLOWER IN THE PRINCIPAL SUBURBAN NURSERIES.

Burlingtònia rígida. If Orchidaceæ are chiefly interesting for their singular appearance and delicate flowers, the subject of this notice will not fail to please. Its mode of growth is very remarkable. From the first bulb which is formed, a long rhizoma, not thicker than a very stout wire, proceeds perpendicularly for about five or six inches, when it develops another pseudo-bulb, the minute white roots of which hang waving in the air in all directions. The rhizoma continues ascending indefinitely in this way, perfecting a new pseudo-bulb each year; and when (as is the case with Messrs. Loddiges' specimen) the original plant consists of several pseudo-bulbs, these give birth to as many stems, which, if neatly arranged, present a most prepossessing aspect. From the base of the youngest pseudo-bulbs, inside the sheathing foot-stalks of the leaves in which they are enveloped, the flower-stem arises, being of a still more slender nature than the rhizoma, and growing erectly to the height of four or five inches, then emitting three or four enchanting flowers from its summit, which are large, purplish-white, and extremely elegant. Messrs. Loddiges have a plant now blooming in their orchidaceous-house, and every feature of it is in the highest degree alluring.

Dendròbium macrochìlum. We know not whether this superb plant should not be placed almost at the head of its congeners in a list where beauty is the criterion of precedence. Nine or ten flowers being at once expanded on a specimen at Messrs. Loddiges', we have thus an opportunity of examining its merits, and profess ourselves incapable of deciding its claims to superiority over the other species, so nicely balanced is their influence on our senses. The stems are not more than a quarter of an inch in diameter, and though they may be fastened to erect stakes, their natural habit would seem to be pendulous; since, when released on the protrusion of the blossoms, they acquired a drooping disposition. We noted as rather curious that, while the lower part of the stem retains its verdure and foliage, about a foot of the upper extremity (this being the portion on which the flowers are borne) is completely incased in a whitish-brown sheath, and entirely leafless. The blossoms appear either solitarily or in pairs, and are particularly large: the sepals are lanceolate, pinkish lilac, tinged with green on the outside, conspicuously reticulated with light purple veins, and prolonged at the base into a short, thick, and very obtuse spur; the petals are similar, but somewhat broader, and without the shade of green. The unusual elongation of the labellum constitutes the most prominent trait; this organ has a slight tendency to a cucullate form, and is much attenuated towards the end, the colour of the interior being rich purple, finely striped, and covered with velvety down. Our London subscribers will perhaps feel desirous of profiting by Messrs. Loddiges' well-known liberality to visit their collection at this period, in order to see and admire a magnificent specimen of *Dendrobium fimbriatum*, on which about eight hundred surpassingly splendid blossoms have just reached perfection. *D. Cambridgeanum* (figured in our December number for last year) has also recently blossomed at this establishment.

HIPPEÀSTRUM ANÓMALUM. A new species, imported by Mr. Knight, King's Road, Chelsea, and blossoming in the stove of that gentleman. Being a bulbous plant, with flowers of the usual ephemeral character, and not strikingly ornamental, it will scarcely be sought by any but the avowed lovers of bulbs. The blossoms are elevated on a thick rigid peduncle, and are closely arranged round its apex. Crimson and green are their principal colours, the latter of these being triflingly predominant. The segments of the perianth are narrow, and considerably drawn out at the points. It is treated as a stove species, and can be managed as other bulbs of the same nature.

HÒVEA VILLÒSA. From all other *Hoveas*, this pretty plant may immediately be distinguished by the great degree of dark brown villosity in which most of its members are enveloped. It has narrow leaves, a rather robust habitude, and simple but ornate purplish-lilac flowers. These last are now opened in the greenhouse of Messrs. Loddiges, Hackney, and gratify us as much by their beauty as by the time at which they exhibit themselves.

KENNÈDIA STÍRLINGII. With little of the engaging elegance for which some *Kennedias* are so properly esteemed, this species does not materially deviate from the common habit. Its stems are apparently straighter, and have less inclination to twine than those of several other kinds, while the leaves are quite smooth, of a pure green, and having lengthened petioles, on the edges of which a row of hairs is discernible. Dull brick-red is the preponderating hue of the flowers; but they are slightly blotched with a yellow tint in the middle. In the plants beneath our observation, which are grown in the nursery of Messrs. Young, Epsom, the blossoms are small, and far from being showy. The species is not at all comparable to *K. Marryattæ*;—a plant on whose excellences it would be nearly impossible to expatiate too forcibly.

MIRBÈLIA SPECIÒSA. We always experience delight in attempting to raise valuable old plants from comparative obscurity to that position which their qualities demand; knowing that those persons who act upon our recommendations must invariably be gainers thereby, inasmuch as intrinsically interesting objects are ever more conducive to pleasure than such as enjoy a merely factitious fame. For example, the old plant above-named is worth some scores of the more modern productions by which its place in our greenhouses is usurped. We saw it flowering last month at Messrs. Loddiges', and a few scattered blossoms yet remain. The leaves are linear, closely pressed to the stem, recurved at the margins, and of a thick texture. The stems are hairy while in a young state. The colour of the flowers is a bluish-lilac, with a yellowish-white spot in the centre, which is surrounded by a belt of deep purple. It has altogether the appearance of a species of *Hovea*, and is equally as showy as any member of that genus.

ONCÍDIUM PÙBES. In all new species of any genera, a difference of form from those previously existing is of course expected. Yet, in a large genus like *Oncidium*, thorough distinctions become increasingly difficult. *O. pubes* is, however, manifestly but indescribably novel in the peculiar shade of its flowers, which we can only express as a kind of greenish-yellow, mottled with a similarly undefinable light brown tint, and a little pink blotching on the lip; and the manner in which the blossoms unfold themselves,—never throwing back their outer sepals, or fully exposing the whole of their interior,—is still more characteristic. Besides these points, the flowers are generally borne opposite to each other, and not disposed with such freedom or wildness as is commonly observable. The pseudo-bulbs are long, cylindrical, and of a small diameter, being occasionally covered with very minute warty excrescences. In Messrs. Loddiges' collection plants have been blossoming for the last two months, and display a considerable fertility.

SPIRONÈMA FRÀGRANS. Mr. Low, of Clapton, received this plant as a supposed species of *Tradescantia*, but when the flowers were developed last month, Dr. Lindley applied the name here given. In its general contour, particularly in that of its foliage, it is exceedingly like the old *Dichorizandra thyrsiflora* of our stoves, the main difference being in the more rigid and darker green leaves of the latter. But the blossoms are wholly dissimilar. They are densely collected on a terminal panicle or branching spike, and though pleasing in the aggregate, are individually inconspicuous. The lower portions are composed of small greenish-white petals and similarly uninteresting calyxes, while each filament is surmounted by a spreading white membrane, which, on account of the number of the blossoms, creates a pleasing appearance. Its fragrance is highly grateful, and may be compared to that of *Asperula odorata*. After the flower-spike was removed, it began to protrude shoots just below the point of severance, thus indicating a shrubby character. It is an evergreen stove-plant, requiring the same culture as *Tradescantia virginica*.

Zìchya trícolor. A plant bearing the name of *Kennedia pannosa* recently bloomed with Messrs. Young, of Epsom, and likewise at the Clapton nursery. Having carefully compared it with specimens of the species designated *Zichya tricolor*, we cannot but consider them identical; the trifling disparity manifested having palpably been occasioned by a diversity of management. It is a strong-growing species when favoured with congenial treatment, having downy stems and leaves, the leaflets of which last are roundish, and, together with the points of the stems, covered with a blackish-brown pubescence at the time of their first development. Red, yellow, and purple, are the three colours of the flowers which have suggested its specific title.

OPERATIONS FOR APRIL.

Never, perhaps, was there a more signally beneficial change in the weather, or one more thoroughly in accordance with every cultivator's desires, than that marking the close of February, and prolonged considerably into March. The natural heat of the sun being so admirably tempered with cold winds and frosts, while the surface of the earth was dried and pulverized, vegetation was prevented from advancing in the progress towards certain destruction which had so unhappily begun.

We thus hurriedly glance at the past, with a view of enforcing the lesson, which few display much aptitude in learning, derivable from this extraordinary interposition of Nature. Plants are, much more than animals, the subjects of extraneous circumstances. Their developments take place precisely at the time when atmospheric elements are congenial, whether this occur in February or May. Hence, where the former is the case,—as it has been, indeed, in the present season, to a limited extent,—extreme detriment would in all probability ensue, were not man to exercise some counteractive force.

Art is, proverbially, but the handmaid of Nature. The procedure of the power last named may be erratic, unseasonable, and apparently injurious; and it is for the cultivator to inspect, control, and guide its influences as far as possible to the fulfilment of his desiderated objects. Thus, in the earlier months of the year, it devolves upon the gardener to throw open, on every appropriate occasion, all the receptacles in which plants have in any way been confined through the winter, that their growth may not be resumed till a fitting period, and may then have every appliance which can render it of a strong and vigorous description.

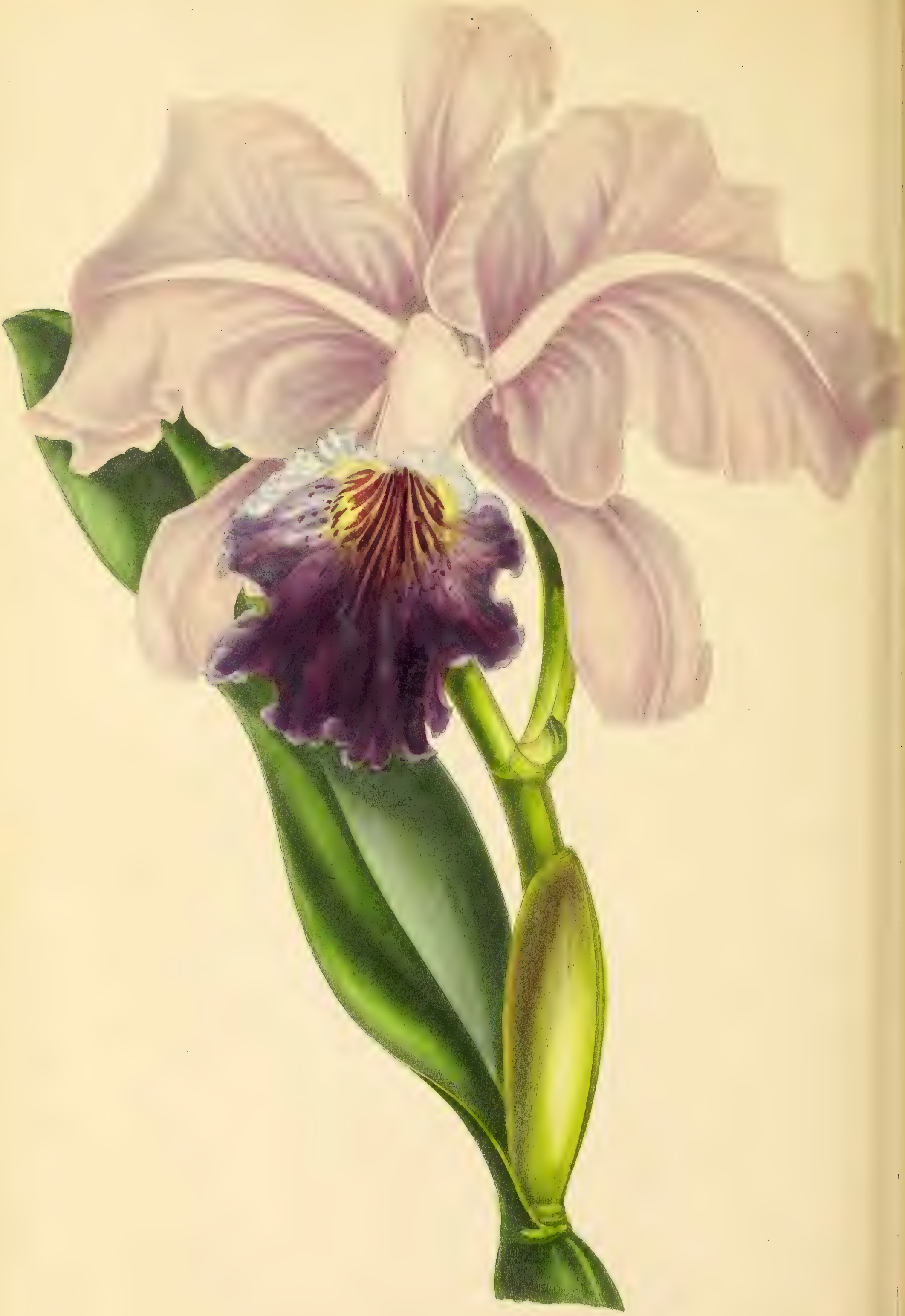
Not only plant-houses, but frames, and those other kinds of temporary detached coverings placed over specimens in the open borders, should be subjected to the preceding precept. Straw, mats, and litter of all sorts, ought to be removed daily when the atmosphere is at all genial, and only replaced during very cold nights. These things may be already better attended to than we are able to believe; but we wish to see them effected on philosophical principles, and for the acknowledged purpose of enabling the growth of plants to acquire a degree of solidity as it advances.

April is usually regarded as the month in which propagation should be mainly performed. There are three groups of plants, the cuttings of which require different treatment; these being shrubby stove-plants, succulents, and greenhouse or half-hardy species. With all, however, the grand point is to strike them as quickly, but with as little heat, as practicable. Those of stove-plants naturally require the highest temperature; yet, if the pots containing them are simply plunged in half-exhausted bark, without any assistance from fire-heat, they will root more speedily than most growers imagine, and certainly sooner attain a flowering state.

The cuttings of succulents, such as *Mesembryanthema* and *Epiphylla*, will need placing in a dark arid position for several days before planting, and are to be preserved particularly dry while striking. To this end, they should not be kept in a propagation-house, but in one of a much drier atmosphere, and simply covered with a hand-glass, over which a little shading can be thrown if the sun be too violent.

In the multiplication of half-hardy plants, which designation includes sub-shrubby and partly herbaceous species, a great heat is frequently employed, in the hope of preparing them sooner for summer transplantation. It is quite plain that such a design could never be fulfilled by that means; for, instead of affording them an advantage over unsheltered species, it positively impedes their growth, as well as renders it exceedingly weak, and places the specimens in great jeopardy. An unnatural and debilitated development may doubtless be occasioned; but when the plants so treated are transferred to the open air, its action will cause such a decided check, that all they may have previously gained will be more than counterbalanced thereby.

From these considerations, it appears that heat is an indisputable evil in the increase of half-hardy plants, and should be very sparingly used. Both economy and beauty will be best realized by its total suspension; and if a small house or frame be devoted to propagation, and its atmosphere confined by the jealous exclusion of outward air, covering each group of cuttings with a small hand-glass, every requisite will be furnished without incurring either expense or injury. Exactly the same may be said of greenhouse species. In those collections where the greatest number of common plants are annually raised, no heat is applied to the propagation-house; and only the rarer kinds, of which an immediate multiplication is required, are at all subjected to artificial excitation.



CÁTTLEYA LABIÀTA; *var.* ATROPURPÙREA.

(LARGE-LIPPED CATTLEYA; DARK-PURPLE VARIETY.)

CLASS.
GYNANDRIA.

ORDER.
MONANDRIA.

NATURAL ORDER.
ORCHIDÀCEÆ.

Generic Character.—*Vide* vol. i. p. 151.

Specific Character.—*Plant* an epiphyte. *Stems* not often numerous, angulated, slightly furrowed when old, attenuated at the base. *Leaves* one or two, situated on the apex of the stem, partially surrounding the spathe at their base, oblong, rigid, obtuse. *Spathe* large, foliaceous, of a brownish hue. *Flower-stalk* smooth, supporting one or six flowers. *Sepals* linear-lanceolate, acute. *Petals* much broader, undulated, acute. *Labellum* cucullate at the lower extremity, expanding into a broad, oblong, entire, undulated lobe, of a light purplish crimson colour in the centre, surrounded by whitish pink, and yellow towards the base.

Var. Atropurpurea.—*Sepals* and *petals* of a rather paler hue. *Labellum* for the most part deep purple.

It is easy to conceive that *Cattleya labiata* must have created an extraordinary sensation among floriculturists when it first developed its magnificent flowers. Even now, that so gorgeous a spectacle has become comparatively common, it cannot be witnessed without the most enlivening emotions. Like an inimitably beautiful object in an attractive landscape, it stands forth in its princely array, altogether unapproachable by any of the numerous candidates for favour by which it is surrounded.

To say of any single species in a richly painted and lovely tribe like Orchidaceæ, that it rises far above the rest in stateliness and splendour, is assuredly no mean praise. Its very near ally *C. Mossii*, which is probably only a variety, may be supposed to rank equally high in all that can gratify the most confirmed taste; and it has, indeed, been exalted to a superiority which is only the more disparaging when found to have no real existence. From all the flowering specimens that we have seen, it is deficient in depth and glow of colouring, exhibiting a paleness in the sepals and petals which, with a tinge of dull bluish-lilac, greatly lessens their charm. Nor have we yet detected its larger dimensions; and, as so much depends on cultivation, we suspect they have been simply fortuitous; many plants of *C. labiata* bearing blossoms fully twice the size of those on weaker specimens.

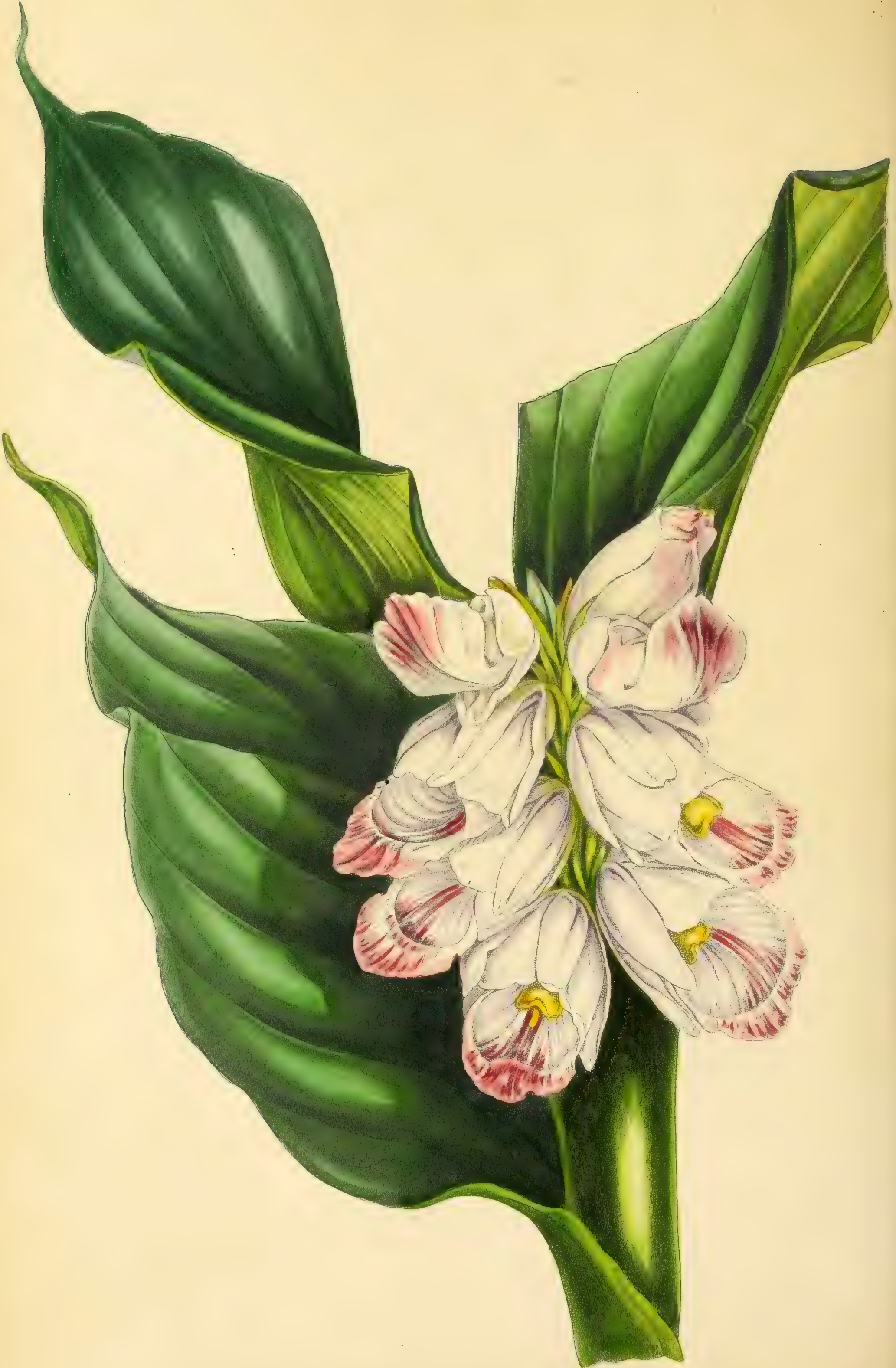
The superb variety to which we have now the satisfaction of doing justice by an excellent figure, (which is probably, however, on a rather reduced scale,) differs from its original in the hue of the lip, and the increased size, as well as somewhat lighter tints, of the exterior members. Of the second item in this enumeration there can be no question, since the plant which blossomed had not been imported above two or three months, while its growth was scarcely commenced; so that, if, when every circumstance attending its expansion was unfavourable, it was nevertheless particularly large, flowers produced under more propitious conditions will certainly sustain their character.

In the labellum of *C. labiata*, (for a drawing of which see vol. iv. p. 121,) the purple colour is more mixed with brown, and much less diffused; the base is considerably paler, with copious streaks of alternate deep yellow and brown; and there is a broad band of pinkish lilac round the extremity. Our variety, on the contrary, has a lip in which deep purple is at least the distinguishing hue, and which spreads itself, although in various shades, over nearly its whole surface. *C. Mossii*, again, has a number of very distinct brownish-purple blotches on this organ, with no disposition in these to flow into each other.

It was introduced by Mr. Low, of Clapton, along with many other orchidaceous and cactaceous plants, in the autumn of 1839; having been sent thither by Mr. Charles M'Kenzie, a collector in the employ of that firm, from La Guayra. The specimen here represented flowered at the above nursery in December last.

The cultivation of Cattleyas has been particularized at p. 6 of the fifth volume of our Magazine, to which we may direct the inquirer for all useful details. The treatment bestowed by Mr. Low in the first stages after the plants' arrival in this country, may, nevertheless, be here registered. They are placed in a very confined pit, part of the roof of which is opaque, and the other portion covered with mats when the sun is shining. A warm moist atmosphere is maintained, and the stronger specimens, after being potted, are plunged in fermenting bark, while the sickly ones are suspended from the rafters or attached to the walls. In this situation, the partial darkness enables them gradually to recover from the effects of their long torpidity, and the genial atmosphere soon elicits their slumbering energies.

The name, *atropurpurea*, applies to the peculiar amount of dark purple in the labellum of the flowers.



GASTROCHÌLUS PULCHÉRRIMUS.

(PRETTIEST GASTROCHILUS.)

CLASS.
MONANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
SCITAMÍNEÆ.

Generic Character.—*Corolla* double, in a six-cleft series: interior lobes united with the base of the filament into a tube. *Labellum* gibbously-ventricose. *Anther* naked, with obtuse lobes, and a longer retuse connective.

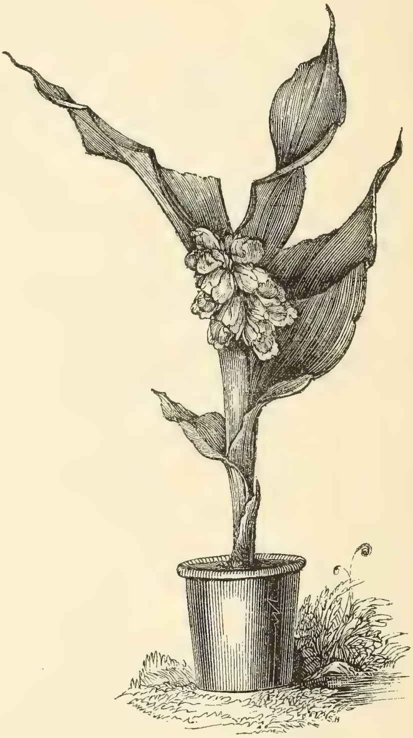
Specific Character.—*Plant* herbaceous, perennial, caulescent. *Roots* tuberous, fasciculate. *Leaves* ovate-lanceolate, clasping the stem at their base, acuminate, with prominent divergent veins, about four inches in length. *Flowers* produced in a terminal spike, dense, imbricated, drooping, in pairs. *Corolla* nearly white, with a slight dash of pink and yellow. *Petals* linear-lanceolate, obtuse; lip large, cucullate, bellying considerably at the base, streaked and blotched with red towards the extremity, and with an irregular margin.

A considerable portion of the floral riches of India has latterly been opened up to us through the instrumentality of Dr. Wallich, Dr. Royle, and others; but, so far from having exhausted them, we are yet only on the eve of realizing a more abundant harvest. As our communication with that fine country is facilitated, and British observation pervades it more extensively, our gardens will be inundated with tropical treasures; and, unless a great increase of accommodation is afforded, it will soon be an arduous task to select the most deserving.

Gastrochilus pulcherrimus fully answers the description conveyed in its specific title, its delicate blossoms being truly most fair or most beautiful. It is a tuberous-rooted herbaceous perennial, beginning its growth in the summer season, by pushing up one or more stems to the height of eighteen inches, from the centre of which the flower-spike is protruded in the months of August and September. Each of these spikes, on a vigorous plant, produces from twenty to thirty blossoms; two, four, or more of which open daily towards the end of September, and the succeeding two or three weeks. Pinkish white is the predominant hue of the flowers, the extremity of the inflated lip being blotched or striped with reddish pink, which is of such a singular tint, as to engender the supposition that it has been applied artificially by some master pencil.

Messrs. Rollison, in whose stove the subject of our drawing bloomed throughout

October, 1839, received it from Dr. Wallich, superintendant of the Botanic Garden, Calcutta, some time during the year 1838. We learn, from Dr. Wallich's superb work on Asiatic plants, that it was found at Ragoon, most probably a district in Nepal, growing in woods, and flowering in the month of August. At Messrs. Loddiges' we have also had occasion to note its beauties, these gentlemen having succeeded in procuring a very abundant exhibition of blossoms.

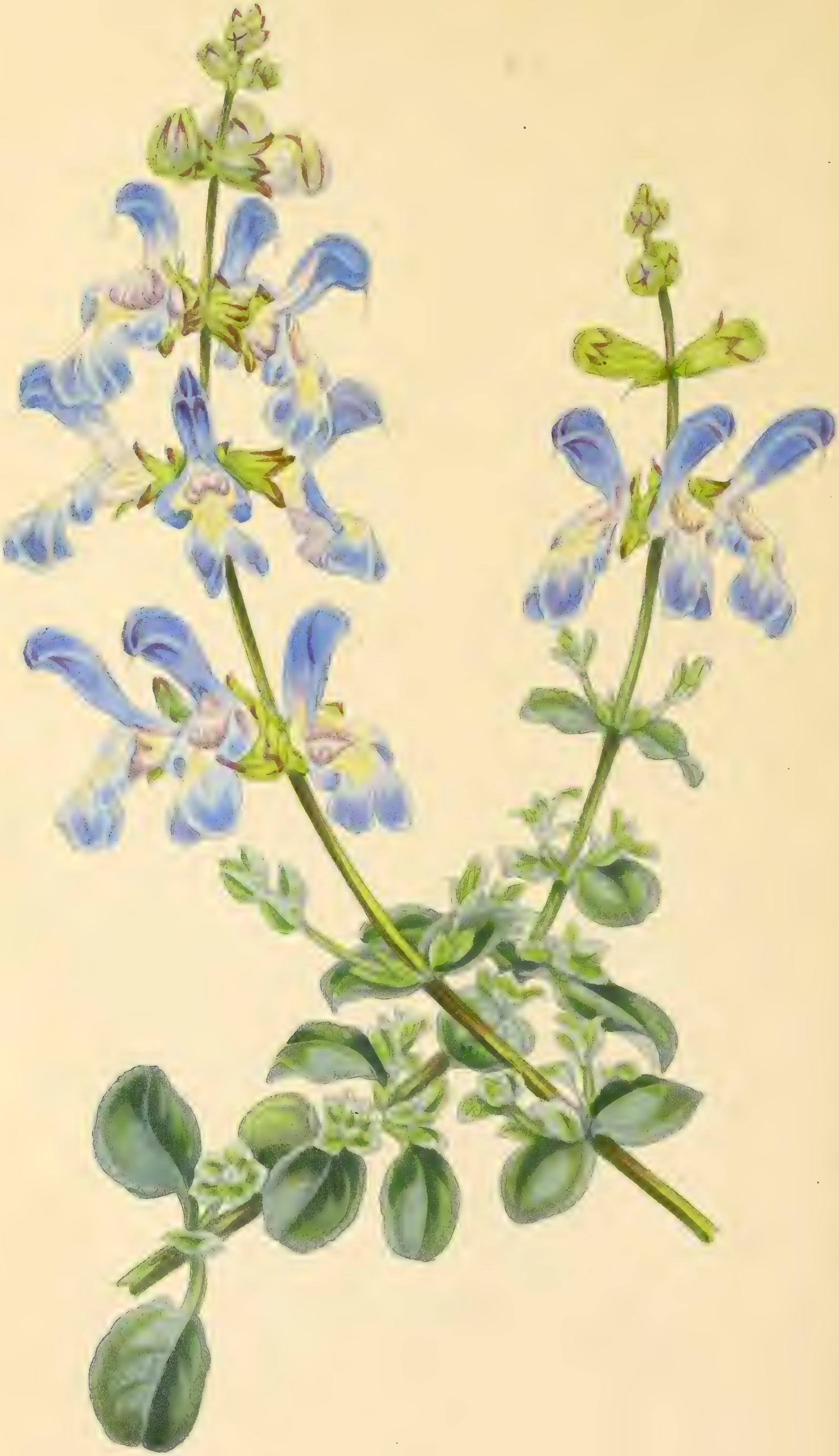


In cultivating this pretty plant, two points are to be observed. It should be repotted annually about April, shaking off all the old soil from its roots, and using a pot proportionate to the usual extension of the latter, which is not very great. The soil must be of a light description, such as a sandy loam, with a little fibrous heath-mould, and some sand. Its friability is indispensable, on account of the dryness to which it will afterwards have to be reduced; and, both for this reason, and to prevent disease, very little water should be given till the shoots are seen to be advancing. When the plant has fairly started, the administration of moisture may be regulated by its apparent necessities; and it must be kept thriving by liberal supplies during the whole period antecedent to the extrusion of the flowers.

Directly the blossoms have faded, it will commence withering, which should be promoted as much as possible by a steady diminution of fluid sustenance; and on its thorough decay, the pots are to be set in a dark but safe position till the following spring, taking care that neither hurtful damp nor drought reach them.

To effect a multiplication, let the plants be divided at the time of potting, retaining a stem and roots to each division, and cautiously avoiding the infliction of too large a wound on the general axis.

Gastrochilus is derived from *gaster*, the belly, and *cheilos*, a lip; the lip of the flowers being ventricose or inflated.



SÁLVIA LINARIOÌDES.

(LINARIA-LIKE SAGE.)

CLASS.
DIANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
LABIÀTEÆ.

Generic Character.—*Calyx* ovate, tubular or campanulate, bilabiate : upper lip entire or tridentate : lower one bifid : throat naked inside. *Corolla* with an enclosed or exserted tube, which is equal, ventricose, or widened, sometimes furnished with a ring of hairs inside, sometimes naked, or sometimes furnished with two teeth or processes on the lower side at the base : limb bilabiate ; upper lip erect, rarely spreading, straight or falcate, entire or emarginate : lower lip spreading, shorter or longer, with the lateral lobes oblong or roundish, spreading, reflexed or twisted erectly, the middle lobe usually the broadest, entire or emarginate. *Rudiments* of superior stamens wanting, or small and club-shaped : lower two always fertile, inserted near the throat of the tube ; filaments short, horizontal, rarely erect, articulated with the anther at top, and usually drawn out beneath the articulation, rarely almost continuous. *Anthers* dimidiate ; connective elongated, linear, articulated transversely with the filament, ascending under the upper lip of the corolla, and bearing at the top a linear, adnate, or versatile fertile cell, and deflexed or erect behind, and sometimes bearing another smaller cell which is either fertile or deformed, and empty ; free, but usually combined together, or connate in various ways. *Disk* of *ovarium* glanduliferous in front. *Style* ascending, bifid at top : lobes sometimes subulate, equal, or the superior one is longest, and sometimes the lower one or both are rounded, dilated, and flattened. *Stigmas*, for the most part, minute, terminal, or in the larger part running along the lobes of the style. *Achenia* ovoid, triquetrous, dry, glabrous, usually very smooth.—*Don's Gard. and Botany.*

Specific Character.—*Plant* shrubby, evergreen, smooth, growing about a foot high, and branching very freely. *Leaves* opposite, scarcely petiolate, entire, approximating to a spatulate form, obtuse, very slightly crenate, much and distinctly reticulated ; upper ones simply ovate. *Calyx* with five nearly equal acute segments, green, with brown margins. *Flowers* spicate, verticillate, mostly three in a whorl. *Corolla* two-lipped ; upper lip ascending, cucullate, hairy ; lower one distant, drooping, with two short oblong lateral lobes, and deeply divided at the extremity.

There are not many genera comprising more interesting plants than *Salvia ;* although, with the exception of a few half-hardy kinds, our gardens owe little of their enchantment to its aid. If we omit the brilliant *S. patens*, and two or three of the smaller species, literally nothing is known of the numbers of blue-flowered sorts enrolled in botanical catalogues. We encounter there almost a score of names of dwarf shrubs, with blue blossoms, but cannot tell where to seek for the majority of their living representatives ; unless it be in some ancient domain, the proprietor of which still remains uninfected with the puerile passion for novelties.

Little, we fear, can at present be done for the revival and reinstalment of these delightful objects ; and we can only lament their loss, especially of the greenhouse species. Of all plants adapted to the last-named structure, the most ornamental are those dwarf shrubs which possess a certain degree of symmetry of parts, and bear a moderate quantity of showy flowers. They may be placed in any position without detraction, and can be gazed on from every quarter with the same degree of pleasure. Their aspect is neat at all seasons ; most alluring, of course, when their inflorescence is perfected; but never mean and despicable, even when robbed of their leaves, since their well-proportioned form then attracts attention, and prevents the eye from resting on their barrenness.

The very elegant species of *Salvia* to which we would here give publicity, claims all the best characteristics that can impart value to a greenhouse shrub. It does not soar beyond a foot in height, has an infinitude of branches, which are disposed in the most orderly yet natural manner, flowers with the greatest exuberance, and for several months, while it retains its foliage throughout the winter, and has always a cheerful appearance. There is no hyperbole in this statement. The colour of the flowers may be considered too pale for general effect; but, when brought near enough to the beholder, by being set in a suitable situation, such as the front of a narrow stage, the want of any dazzling hue is more than compensated by the pleasing variegation of their middle, and the soft blue into which it merges towards the outer portions.

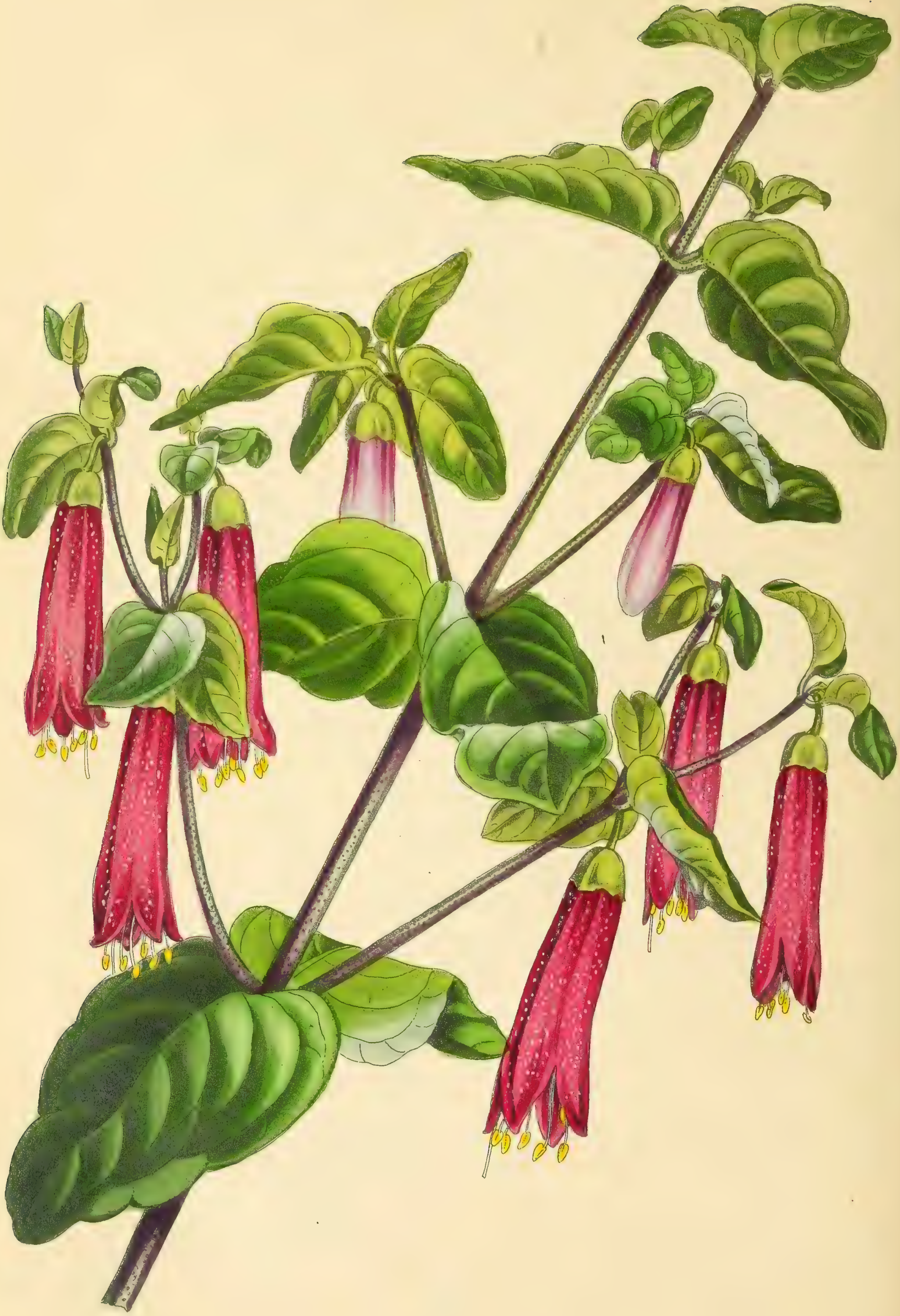
Unfortunately we have no certain information as to the native locality or year of introduction of this pretty little species. Messrs. Henderson, of Pine-Apple Place, were favoured with specimens by a gentleman of considerable botanical acquirements, who had raised it from seeds received promiscuously, but with a strong persuasion that they were gathered in some temperate region of South America. We have not thought it prudent to alter the name under which we first became familiar with it; because, appearing to us to be new, from our inability to discover it in any work within our reach, it is better to preserve the original appellation, than to encumber the science with useless synonymes.

The ordinary culture of greenhouse plants cannot fail to suit our present subject. A compost of loam and heath-mould, with which a tolerable share of sand is mingled, should be supplied yearly in the early part of the season, as its developments seem to be generally somewhat more forward than those of most plants. On this account, also, it must be kept in a perfectly cold house or frame, with very little water, and in a spot close to the glass, throughout the winter, otherwise it will form sickly shoots while it ought to be dormant.

From the readiness with which young branches are produced, shoots proper for cuttings are exceedingly abundant, and they will speedily strike if planted in spring, and carefully tended.

Salvo, to save, constitutes the basis of the generic designation, which has reference to the sanative properties of some of the commoner species.

There can be no doubt that the specific term is descriptive of the distant resemblance in the form of the corolla to that of a *Linaria*.



Correa Harrisii.

CORRǼA HÁRRISII.

(MR. HARRIS'S CORRÆA.)

CLASS.
OCTANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
RUTACEÆ.

Generic Character.—*Calyx* cup-shaped, four-toothed or entire, permanent. *Petals* four, somewhat connivent at the base, or joined into a long tube. *Stamens* eight, equal or larger than the petals; the four opposite them shortest; *filaments* smooth, awl-shaped, or dilated above the base. *Ovary* four-lobed, densely beset with stellate hairs, and as if it were furnished with a calyptra. *Style* four-furrowed, smooth, terminated by a four-lobed stigma. *Fruit* of four capsular carpels; *cells* truncate, compressed. *Seeds* two or three in each cell, shining, fixed to the inside.—*Don's Gard. and Botany.*

Specific Character.—An hybrid production, remarkable chiefly for its vigorous, compact habit, handsome foliage, and large uniformly crimson flowers.

This extremely handsome hybrid so far excels all the authenticated species of *Corræa*, that, in conjunction with the many others now in course of circulation through the country, its cultivation may be expected soon to supersede that of its parents. It is one of the products of a quantity of seeds gathered from an intermixture of the sexual organs in *C. pulchella* and *C. speciosa*, by Mr. D. Beaton, gardener to T. Harris, Esq., Kingsbury, and was obtained and germinated at a previous situation in Herefordshire; but is now named after the gentleman in whose collection it has flowered, and whose liberality in admitting the public to his gardens is equalled only by their highly interesting character.

The practice of hybridization is yet avowedly in its infancy. The extraordinary eccentricity of its results, and the truly wonderful improvements on old plants that are apparent in their progeny, have at length aroused our cultivators to a sense of the injury they are doing to the interests of the art by longer abstaining from so laudable an effort; and with a magnanimous disregard of its consequences to botanical nomenclature, we are satisfied that the ranks of hybridists have lately been much strengthened, and will go on increasing till our plant-houses are filled with a new race of objects, as much superior to the hybrids now existing as they are to their progenitors.

It is gratifying to mark the noble traits which this mysterious operation elicits. In *Corræa Harrisii* there is a boldness of habit, a luxuriance of stems and branches, a size and liveliness of foliage, and a showiness of the inflorescence, which may be sought in vain in the most carefully cultivated specimens of either of the parent species. The several causes which have united in producing this decided amelioration have been detailed by Mr. Beaton, in a valuable paper in the Gardener's Magazine, to which he has invited our attention, and of the more important parts of which we shall add a summary.

Plants intended for hybridization, particularly those which are to produce and mature the seeds, should be of a very healthy habit, and in a luxuriant state of growth. This point is much and justly insisted on, with the concomitant one of their bearing flowers on the strongest leading branches. Mr. Beaton recommends that they should be taken to a stove about the end of February, introducing them to this increased temperature gradually, and not at once transferring them thither from the greenhouse. From all the lateral shoots, the blossom-buds are then removed, leaving only those which are borne on the main stems. "As soon as the flower expands, extract the anthers from the intended female parent; and next day, or as soon as you perceive the pistils getting moist, apply the pollen, at the same time making two or three slits in the whole length of the corolla, to let out the sweet secretion often lodging on the germen. See that the decaying corolla does not cause the style to damp off, as this ought to be preserved till it dries of itself. As soon as you perceive the germen swelling, stop the leading shoots. Apply all safe stimulants till the seeds are ripe, but do not let the plant expend its energies in the production of young wood. Pinch off every bud as it offers to expand. Keep the plant or plants as near the glass as possible all the time, and sow the seeds as soon as ripe."

Aided by these elaborate instructions, the culturist will be enabled to hybridize Corræas in his own collection, and, by continually mixing the properties of the best of these as they produce blossoms, he will, after a few generations, find his success fully compensatory of his labour. We cannot exactly coincide with the assertion, that plants whose seeds are formed and ripened in a stove will give birth to other plants equally hardy; nevertheless, where superior varieties are desired, and hardihood is not an object, heat will certainly be useful.

Mr. Beaton grows his Corræas in a more loamy soil than most cultivators, and finds this practice advantageous. With Mr. Low, of Clapton, who has the sole stock of *C. Harrisii*, it is propagated most easily by cuttings.

WINDS, AND THEIR CURRENT EFFECTS ON VEGETATION.

When any great peculiarity distinguishes the weather, so as to exercise an observable influence on vegetable life, it is a maxim worthy of the consideration of horticultural writers, that no deferred remarks concerning its phenomena and agency can be of such genuine benefit to cultivators, as if they were published immediately after its occurrence. Deductions based on the reminiscences of a remote event, lose nearly all their force on account of the defectiveness of the faculty of memory in many individuals to corroborate and complete them. But those that are placed before the mind while the incidents from which they are drawn are yet brightly imaged on the brain, have the advantage of these recent impressions to establish their propriety, and strengthen their desired operation.

Our present dissertation is the offspring of this reflection. We wish to seize on everything of moment as it passes, and from it either elaborate or confirm principles of future and permanent value. Looking back through the late month of March, we perceive that what the frosts of December had no power to accomplish, the piercing winds which have followed at a period more generally genial have at length effected; multitudes of common border plants having been destroyed, while, in some places, hardy evergreen shrubs are greatly damaged.

If it be recollected that the thermometer ranged much higher on the latter occasion, the injury sustained by plants is, on a superficial view, a curious circumstance; inexplicable, though, from its keeping with prior experience, not surprising to the mere practical man; but at once traceable to a fixed law by the more scientific. Winds, though doubtless originally generated by heat, are universally known to be, with few exceptions, the means of abstracting and wafting it away; and, as well in proportion to their violence as to the temperature of the regions through which they have passed, cause a palpable decrement of sensible heat in bodies exposed to their action, this diminution never being indicated by a thermometer in a corresponding degree, partly because that instrument is not usually placed in a thoroughly unsheltered situation, but chiefly because the thermometer registers the actual temperature of the air alone, without reference to any further conditions by which the radiation of heat from other substances is facilitated.

Of the tendency of winds to lower the temperature of the human body, all are cognizant; as every person *feels* the difference between an atmosphere in a secluded spot and that on an exposed eminence at the same period. Proper investigations render it certain that plants are acted upon in this respect similarly to animal being.

All living things engender an internal heat, which, while vitality lasts, will ever maintain them at a temperature relatively superior to the ordinary heat of the air. Hence, as the latter frequently falls below the heat existent in animal and vegetable matters, it must necessarily be continually extracting their caloric at those seasons. When the atmosphere is calm, the radiation of heat from such bodies is comparatively slow, the involving and partially permeating stratum of air being tempered by that already given out, and consequently not abstracting so rapidly the portion retained; whereas, if winds are travelling over, they bear away the volume transpired, and a rapid succession of cold strata demands a much more profuse effusion; the extent of this loss being exactly adequate to the velocity of the breeze, or the quarter from whence it proceeds.

But although the preceding account explains the manner in which winds dispose of the heat they abstract, and partially describes the mode of their ministration, we have left untouched that intricate element of their action to which all their effects must be ascribed in the season herein commemorated. We have said that currents of cold air naturally and directly disengage the temperature of bodies which they can penetrate, or around which they have full liberty to play. Let us now add, that their next highest office is the liberation of fluids from terrestrial objects, and that such a release can alone be accomplished by vaporization, in the transaction of which the emission of a considerable portion of caloric is requisite.

Fluids and heat have a strong affinity to each other; or rather, no substance can be liquified or retained in that state unless it comprises a certain quantity of heat. The temperature thus resident in a liquid, or a body containing moisture, induces a continual expansion of its watery parts, till at length, driven to the surface, it is there detached and concentrated into the distinct but imperceptible particles that constitute vapour, and then, by its own energy, diffuses itself through the atmosphere, carrying with it much of the inherent caloric, which is now comparatively transmuted to a latent state.

The escape of heat in the process of evaporation is far too little understood. As it intimately concerns the inquiry we have here undertaken, a few words may be devoted to its elucidation. It must first be stated that heat has a property of ascension, ascribable to its total want of specific gravity, by which it is always flying off into a more elevated medium. It thus plainly seeks the upper surface of any substance, and in its progress thither, forces with it the more subtile particles of fluid which are interposed between it and the air. By its constant accumulation in these, (which, being lightest, are always uppermost,) whether from additional extrinsic applications, or by its more tardy abstraction from interior and lower sources, it finally distends and etherealizes them to such a degree, that they are made capable of floating in the atmosphere without any other support than the heat they involve.

Here, then, is the explication of this phenomenon. Water cannot be rarefied into vapour until it has collected into each individual atom of that vapour an amount of heat sufficient to keep it dilated and poised in the atmosphere: when this takes place, it immediately quits the colder portions beneath it, and, both as an essential to its continued imponderosity, and a consequence of its separation, bears with it the element which imparted its volatility, leaving the body from which it emanated with a deduction of temperature equal to the share it contains.

Those who study such matters, will not fail to perceive in the above imperfect description, the reason of the extraordinary force of steam. Were an air-tight vacuum to be heated to the highest possible degree, the materials circumscribing it might be consumed, but they would never explode. On the other hand, if a close vessel be partly filled with water, and the water caused to boil, the intense heat accumulated in the vapour would create such an amazing expansion, that the bursting of the vessel would be inevitable.

We can hardly deem it needful, after what has been advanced, to mention that evaporation is not invariably a result of the external action of heat. Perhaps the most commonly-received notion of this great natural process is, that it is brought about solely by the active influence of the sun; and this is so far correct, that perspiration is most copious under immediate solar agency. Nevertheless, seeing that drought may be excited by other means, and that the main incentive to evaporation is a dry atmosphere, however it may be produced, we learn that vapour is exhaled either by the concurrent operation of solar and inherent heat, or by the simple effort of the latter to attain a greater altitude.

To assist the reader in appreciating our conclusions, we shall now show how excessively cold winds are injurious to plants, and what are the conditions which increase their prejudicial consequences. Creating a remarkable degree of aridity, they must, in conformity to the doctrines propounded, occasion a proportionate amount of evaporation; and, as in the instance of radiation already analyzed, this being borne to other districts as soon as evolved, there is none of the mitigation which would result from the gradual saturation of a stagnant air, but an incessant and equal efflux is maintained. It will follow, therefore, that when a plant surcharged with moisture, or with its members in the fittest state for exhaling it, is subjected to winds, its exhalations will, *cœteris paribus*, be most abundant, and the reduction of its temperature most seriously extensive.

An instant clue is thus obtained to the injury spoken of in the outset of this paper. The unusual quantity of water which fell last autumn, has rendered vegetation so successively turgid, that when this fluid was drawn off by a process which, while it engendered cold, brought no supply of heat to modify its influence, plants could not be otherwise than reduced to the lowest ebb of vitality, or completely killed. In other words, because chilling winds, and not solar agency, were the instruments in relieving vegetation of its unwonted load of moisture, it was deprived of much heat that was absolutely essential to sustain life, and its organization was thus materially disarranged or ruptured.

Other conditions unquestionably combined with the foregoing in this work of destruction. The only one we shall point out is the state of excitation which had been induced by a long period of mildness, whereby, in those plants which had not extruded their buds, a determination of fluids to their more porous extremities was effected, and with such as had begun to elongate their parts, the like motion, with a still greater susceptibility of surface, must have taken place. These of course augmented the discharge of both moisture and heat.

Let us pass, however, to the application of these facts; for, as in ethics, the bare relation of incidents, even when their collateral causes are rigidly examined, is of little value compared with the motives and guides to subsequent action which may be deduced therefrom. The first inference that meets our view, is that thermometers are only useful in uniformly still states of the atmosphere; for the moment it becomes agitated by winds, human feelings are the best test of its coldness. In tempestuous weather, therefore, no instrument should be trusted; but protection afforded in the same comparative degree as it is found necessary to maintain our own warmth.

Still, to guard against misrepresentation, and check any disposition to make use of this direction without due limitation, it must be added that when the sun is potent enough to re-invigorate the plants on which winds are exerted, everything indicates that they are beneficial. It is merely when the external resources of heat are small, and there is no natural provision to make good the deficiencies consequent on extensive deprivations, that bad results may be anticipated, or remedies adopted.

The remaining deduction we have to make, is one which refers more explicitly to the active management of tender plants. It relates to the desirableness of sheltering them from the hurtful operation of spring gales. In the culture of the choicer kinds of fruit trees, such a measure is rarely neglected; and why equally susceptive flowering shrubs should not be similarly provided for, it is difficult to opine. Perhaps it may be said that as the former are obviously grown for their fruit, and as this could not be secured without some protection, policy dictates its employment. So, of ornate plants, we may likewise allege that the end of their cultivation being to procure a good display of blossoms, there is not a whit the less necessity for protective tendance at that season: and we are persuaded it will not be grudged by those who deliberately sift these remarks.

With the simple assertion that what has here been brought forward has no reference to other than plants in the open ground, the entrance of wind to floricultural erections being effectually barred, and its action on their roofs too indirect to merit particular notice, we shall now conclude our observations on these mighty but versatile emissaries of Nature; assured that, by vigilantly watching their effects, we may gain some definite opinions respecting their peculiar powers.

CULTURE OF PELARGONIUMS.

(*Continued from page* 62.)

Winter treatment.—Wherever Pelargonia are grown, whether by the professed florist or the unassuming amateur, we have always remarked that the season in which they have fallen shortest of the condition most consonant with their natural health is at the close of the winter months. By the simplest routine, we can preserve them tolerably free from debility in the summer; but nothing less than unceasing care will effect this while every external circumstance is conspiring to their harm.

Every one must concede that the management of a collection of exotic plants in a variable winter, will at once decide the experience or practical ability of any aspirant for floricultural fame. And if, from amongst this large class, we were to choose any particular tribe, to a successful issue in the culture of which the highest merit should be accorded, we could not hesitate to select those whose stems and leaves were of the most succulent nature, and which, of all that are located in houses, required the lowest temperature. It will be seen, therefore, that we deem Pelargonia at least one of the genera more urgently demanding continuous attention, to keep them in a condition corresponding to the season.

We do not deny that life and an ordinary share of health may be preserved inviolate by the prevalent economy. The object of this essay is to show how the acme of perfection may be reached; and every stage beneath this is only one step in a series of degeneracies, each of which will leave the plants so much nearer the state from which they have been elevated.

To allow full effect to our suggestions, we must revert for a moment to the time before treated of, even though at the expense of a little repetition. Let it be established as an irrefragable position, that the most habitual guardianship of plants in the winter will merely decrease the bad effects of neglect during autumn, if the latter period has been suffered to pass unimproved. Should any specimens be permitted to imbibe an undue quantity of moisture in the months of August, September, &c., and thus to contract such irregular and improper habits of extension, as will continue till arrested by positive cold, they may perhaps struggle through a trying winter, but there is every reason to anticipate the contrary.

The greatest fault we have to expose in the culture of Pelargonia, is the procrastination of the autumnal pruning beyond the most suitable season, thereby detaining the plants from forming and ripening their shoots, ere winter arrives to oppose an effectual barrier to further progression in either process. It is thoroughly essential that this should be done immediately on the fall of the flowers, and that the plants be then placed in a warm department of a house or frame. Treated thus, they will produce and perfect shoots three inches long by the beginning of September, after which there will be ample time to harden their wood by judicious exposure, so that they be not called to pass through the most rigorous period unprepared. All this caution as to temperature and air will, however, be unavailing, unless the provision of water be modified accordingly.

Arrived at the month of November, which, for the sake of convenience, we shall regard as the commencement of winter, Pelargonia are then safely stored in their assigned quarters, and must have a kind of treatment which it is our design now to detail. We have shown the immense importance of solar light to them in summer: how much more they need all that can be furnished in winter, will soon be obvious. Ligneous shrubs, whose foliage is deciduous, and whose yearly enlargements are seldom left immature at the end of autumn, may be stowed away through the winter in any dark apartment, over the humidity and temperature of which the manager has sufficient control, without experiencing aught injurious. It is not so with species of a succulent nature, much less with evergreens, and still less with such as have made a second growth in the decline of the year.

Pelargonia being of the description last-named, must have every ray of light that the atmosphere and the roof will transmit. They cannot be too near the latter, so that they are not in actual contact with it; for it is incorrect to suppose, that by placing plants at a great distance from the glass, in a compartment not heated by artificial means, we proportionally remove them from danger. When frost is severe enough to affect a substance within a foot of the roof, it will ever be found to commit similar ravages at five times the distance, should nothing besides the common air intervene to weaken its violence. Thus, by elevating the plants to where they can receive an adequate amount of one element, we do not render them obnoxious to the dispersion of a still more vital ingredient in their system. Heat is distributed pretty equally through a cold frame, and specimens situated a foot from its roof, will be quite secure from all weather that does not impose the application of an additional covering.

If light be an agent that is so much to be desiderated, the direct converse must be declared of unnatural heat. To kindle fires for the preservation of these plants, is, in our judgment, an admirable method of hastening their destruction. We use this strong expression because the evil we are combating is deeply-rooted; and old prejudices not being easily exterminated, we are content to endure the obloquy of having given explicit utterance to the naked truth.

Not to leave our *dictum* as a handle for the ignorant, it may yet obtain some enforcement from an exhibition of the links in the chain of consequences which, when associated, produce the result we have mentioned. Fire heat, acting on plants for which such a stimulant alone is requisite to set their energies again in motion, must indubitably have this effect. The shoots thus excited in the absence of light, are attenuated, and become so unhealthy, that when the artificial temperature is withdrawn, they are liable to perish from dampness, or from a very trifling degree of cold that may afterwards unsuspectedly find admittance. We have not here taken into account the feebleness which such circumstances would occasion in the flowers that might ultimately be produced, if the plants themselves escaped damage; as that is quite another contingency.

Now, to reverse the fundamental condition in this mismanagement, and keep Pelargonia in cold frames or pits, for which any needful quantity of covering is provided, it is plain that no elongation of the stems could be accomplished, and that subsequent injury could not possibly accrue where there was nothing to cause it. Covered frames are, consequently, the most likely to ensure dormancy; and the maintenance of dormancy is the soul of winter cultivation.

But it may be asked how is that fatal foe, excessive moisture, to be expelled, when there are no means at hand to effect this purpose? We answer, mischievous dampness does not arise causelessly; it is not merely accidental. The outer air may be laden with moisture for weeks together, and the plants in a frame may, at the same time, be as dry as is necessary, under proper restrictions. It is by watering the plants that too great humidity is occasioned; and in the power of supplying or refusing that element, the cultivator holds perfect facilities for rendering the atmosphere almost as arid as he pleases.

The few hints which follow on the administration of water to Pelargonia during winter, are founded on experimental inquiries. First, never give water to any plant, the soil around the roots of which is not evidently reduced nearly to a powder on the surface, owing to its dryness. Secondly, in watering, never employ a rose, but pour it through the spout of a common pot, and avoid wetting the leaves. Thirdly, apply a very small quantity, for it is dangerous to bestow too much at once, as the presence of fluid increases the influence of cold. Lastly, see that every pot is effectively drained, and that they are so arranged on a stage as to be beyond the reach of the refuse fluid from those above them.

Light, heat, and water,—the three leading constituents in the culture of plants,—being disposed of, and the relative proportions in which they are required having been generally stated, the operation of several causes that would annul or abate the benefits of all the preceding rules, still ask investigation. There is one point to which we would ascribe an influence especially disadvantageous, that we do not recollect ever to have heard mooted. Plants in frames are commonly placed on a layer of ashes, or some congenerous material. The water furnished them from above, and part of which necessarily drains through the pots, enters the substance beneath them, and again arises from thence in the form of vapour. It is from that source that the air is often rendered too humid for tender vegetation, and putrefaction or mouldiness ensues.

Our remedy for this evil would be to raise the frames on blocks a little above the ground on which they stand, and cover the bottom with thin slabs of slate, like those so frequently used for greenhouse stages. If a very gentle declivity were allowed to this floor, and an aperture left in each of the lower corners, the main portion of the fluid filtered from the pots would be instantly carried to the outside of the frame, to the palpable obviation of its dangerous diffusion through the atmosphere. The primal expense of this system may be made an objection, but the undecaying nature of the material, and its ready appropriation to more permanent purposes, will meet that complaint; while the advantages it would confer must be at once apparent.

For the exclusion of frost, we have a somewhat novel method to propose. Some of our readers may, perchance, have met with it in the establishment to which we are indebted for the hint, and where it has been practised for several years; but to most of them we imagine it will be new. It consists in the formation of slender frames, of deal or other slight wood, of the precise size of the light they are intended to cover, with two diagonal bars of a yet weaker nature, crossing each other in the centre, and fixed at the four corners. Over these, a sheet of very strong and close canvas is stretched, and fastened to the frame all round, as well as to the transverse bars. The whole is then thickly covered with pitch, of which two coatings may be applied, if it is thought desirable.

The superior adaptation of such a covering to the purposes of shelter cannot be doubted. By thoroughly coating it with pitch, all the interstices of the canvas are filled up, and it acquires a degree of impermeability which no other light substance can possess, and which is eminently useful in the retention of heat. The frames may be kept during the summer in any dry shed, and if a little fresh pitch be added as soon as indications of its need are observed in the canvas, they will last many years, and be extremely serviceable. We regard the scheme as most excellent, both for its efficacy and economy, and sincerely desire its universal adoption.

Our final hints on Pelargonia will be given in the next Number.

FLORICULTURAL NOTICES.

NEW AND RARE PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR APRIL.

Brássia Lanceàna; *var.* viridiflòra. In the general colour of its flowers this plant has a great resemblance to the old *B. maculata*, but their size, peculiar markings, and narrow exterior parts, properly associate it with *B. Lanceana*, from which, again, it is only separated by its light green blossoms, and somewhat more attenuated sepals, which are indistinctly tinted with yellow, but far from being so much so as those of that species. C. S. Parker, Esq. imported this variety from Demerara, and it produced its interesting blooms in the collection of this gentleman at Annesley, near Liverpool, in September 1839. Its principal recommendation, besides the lively green and pleasing spotting of the blossoms, is their delicious odour. *Bot. Mag.* 3794.

Calostémma lùteum. A pretty bulbous plant, not very dissimilar to some species of *Narcissus*, yet decidedly different in its botanical character. It has been known in Britain several years, although at present scarce. The flowers appear in dense terminal umbels, their colour being a bright yellow. Bulbs are occasionally introduced from New Holland, its native country, and they flower freely if grown in pots, or planted in a conservatory border, provided their supply of water is discreetly regulated according to their natural habits, which are, to grow luxuriantly till they flower, and afterwards gradually to decay. Moisture must, therefore, be liberally afforded during the former stage, but nearly withheld while the process of fading proceeds, and entirely suspended in dormancy. It is simply a half-hardy plant, and should not be exposed to frost. Multiplication is effected by seeds.

Ceanòthus pállidus. Scarcely less beautiful than the enchanting *C. azureus*, this species is said to be much hardier, and will, in consequence, be more highly esteemed as a suitable object for adorning garden-walls. It differs from *C. azureus* chiefly in having narrower foliage, which is not hoary beneath, and flowers of a paler hue, between the colour of milk and pure azure. We have met with it in the London nurseries, and can bear witness to the strikingly prolific manner in which it develops its flowers. If cultivated in a pot, it forms a very handsome shrub, requiring the protection of a frame in winter, whereas, when trained to an appropriate wall, it will thrive in a moderately-rich and dry loamy border, and needs slightly sheltering only in vigorous weather. Plants were presented to the Horticultural Society by Messrs. Baumanns, of Bollviller, under the name of *C. ovatus*. *Bot. Reg.* 20.

Cèreus múltiplex. The astonishing size of the flowers of many globular-stemmed kinds of *Cactaceæ* is a matter of common observation, though we have never witnessed a comparatively larger or more charming illustration of this fact than in the noble species whose name is prefixed. The stem approximates in shape to a balloon, has numerous ribs, and likewise a considerable number of aculei, which are rather short, and arranged after the usual manner. According to the drawing before us, the flower is fully as large as the plant, and the petals are of a delicate flesh-colour, merging into pink towards the points. It is a native of South Brazil, and blossomed in the rich collection of Messrs. Mackie, of Norwich. Judging from the figure, it is one of the most ornamental of the tribe. In gardens it is sometimes called *Echinocactus multiplex*. *Bot. Mag.* 3789.

Genísta bracteolàta. Originally found in Teneriffe by Mr. Webb, and transmitted from thence to Mr. Young, of the Milford nursery, where it flowered in 1832, and has since, it is believed, been wholly lost. The plant is covered with a hoary pubescence, has ternate leaves, the leaflets of which are obovate, obtuse, and narrow at the base, and the yellow flowers are situated at the extremities of the shoots, collected into lax racemes. From the diffuse character of the latter, and the evident want of a more aggregate distribution of the blossoms to create a showy effect, it does not appear a very valuable species. Like *G. canariensis*, it was kept in a greenhouse, and potted in sandy loam. *Bot. Reg.* 23.

Impàtiens glandulígera. The prime peculiarity of this fine Balsam is the curious little glandular hairs near the bottom of each leaf, and the round club-shaped stipules just below them, surmounted by similar glands. In other respects it is a remarkably rapid-growing annual, attaining, in one season, the height of twelve feet, notwithstanding the seeds had not been sown till the month of May. The leaves are verticillate, ovate-lanceolate, much serrated, strongly veined, and of a rather coarse appearance. The flowers are particularly handsome, of a deep reddish-purple, with a large concave open spur, spotted with red on a yellow ground in the interior. It does not require a high temperature, but delights in a moist atmosphere, with a moderate but equable heat. The following passage, quoted by Dr. Lindley from the work of Dr. Royle on the Himalayan Flora, &c., may be useful to the cultivator of the numerous beautiful plants from that district: "There is a peculiarity in the hill-climate of India, where the moderation and equability of temperature, excess of moisture [in the atmosphere], and consequent smallness of evaporation during the rainy season, have been shown to be favourable to the existence of tropical plants." Balsams, Orchidaceæ, and others that are considered as exclusive inhabitants of tropical regions, are then adduced, and are stated to remain "apparently unchanged for weeks together" at this period; although "of so loose, moist, and cellular a texture, as would at any [other] season in this locality be destroyed in a single day." *Bot. Reg.* 22.

Ipomœa longifòlia. There is much of novelty in the habit of this meritorious plant, which was found by Mr. Hartweg, in the pastures about Leon, Mexico, and sent to the Horticultural Society, by which body it has been profusely distributed. "It is a half-hardy perennial, with a long spindle-shaped root, and a stem from four to five feet long, without any side branches;" the foliage being oblong, and the large white flowers, with a purplish centre, axillary, solitary, and protruded on long peduncles. "The time of flowering is from July to September; each flower opening in the morning, and lasting all day, if not exposed to the mid-day sun, and each stem producing a fresh flower nearly every day. Being very fragrant, it is well worth placing in the sitting-room during the blooming season, especially as the plant, when in flower, seems to require shade." From the nature of the roots, a rich soil is demanded in the summer season, but they must be removed from it and stored in a dry place at the decline of autumn. It may be propagated by seeds, and the young shoots can also be taken off when about two inches long, and managed as dahlia cuttings. *Bot. Reg.* 21.

Miltònia cándida; *var.* flavéscens. A trifling variation in the colour of the labellum is the sole circumstance which stamps this plant as a new variety, that organ being "yellowish, with a tinge of purple," and the column likewise "white or pale yellowish-white." Considering that *M. candida* itself has a purple shade at the base of the lip, it is highly probable that the difference here noted is only accidental. The variety (if such it be) was introduced from Brazil, by the Earl of Arran, and bloomed at the Glasnevin Botanic Garden in October 1839.

OSBÉCKIA CANÈSCENS. This splendid Melastomaceous shrub, apparently allied to *Lasiandra*, was received at the Botanic Garden, Edinburgh, from Berlin, without any notification of its native country. The stem is weak, seven feet high, four-sided, and hoary. The leaves are opposite, ovate, obtuse, with parallel veins, and the flowers disposed in panicles at the summits of the branches, being individually about an inch and a half across, rich purple, and very showy. It flowers in July and August, and will succeed best in a moist heat, potted in a compost of enriched loam and heath-mould. *Bot. Mag.* 3799.

STÈVIA BREVIARISTÀTA. We are not informed whether this neat *Stevia* be fruticose or herbaceous, but the appearance of the specimen delineated seems to indicate the latter character. It is not unlike a *Verbena* in aspect, as the slender stems, opposite serrated leaves, and dense heads of pretty pink blossoms, clearly attest. Two to three feet is its common height, and it branches profusely. Mr. Tweedie discovered it in Tucuman, South America, and sent seeds and specimens to the Glasgow Botanic Garden in 1836, where it flowered in the stove in July 1837. We are by no means certain that it would not flourish better and grow more compactly in a greenhouse. *Bot. Mag.* 3792.

NEW, RARE, OR INTERESTING PLANTS IN FLOWER IN THE PRINCIPAL SUBURBAN NURSERIES.

ACÀCIA PULCHÉLLA; *var.* MÁGNA. An exceedingly beautiful shrub, and so much unlike the dwarf *A. pulchella*, that a specimen in the greenhouse of Mr. Low, Clapton, is now nearly twenty feet high, and densely bedecked with its elegant flowers, which are globular, but almost twice the size of the original species. Indeed, every feature in its character is far larger than the corresponding ones in *A. pulchella*, and it is neither improperly separated nor inaptly named. For planting in the border of a conservatory, it is one of the handsomest *Acacias* yet introduced; the closeness of its habit, and the wonderful prolificacy in which it flowers, being equalled by few species of any genera.

BRÁSSIA VERRUCÒSA. Green, greenish-yellow, or pure yellow, with irregular spots and blotchings of a dark brown or dun colour, are usually characteristic of the blossoms of all *Brassias*, and the present one is not an exception to the rule. It is extremely like the plant figured in the Botanical Magazine under the name of *B. Lanceana*, var. *viridiflora*, except that there are a number of obvious and singular dark warty excrescences on the lip, which sufficiently constitute it a new species. It was imported by Messrs. Rollison, Tooting, from Mexico, and has just bloomed in their establishment. It is an attractive-looking plant, and will be welcomed as an important, because very distinct, acquisition by the cultivators of Orchidaceæ.

Calánthe flàvicans. This very pretty and perfectly new plant was sent to Messrs. Rollison, from the Mauritius, and is now blossoming with these gentlemen in great vigour. The leaves and habitude are of the common description, the former being large, long, ovate-lanceolate, and deeply nerved. It is in the flowers that the novelty is to be traced. The sepals are white, half as large again as the petals, three in number, broadly lanceolate and acute, lengthened at the base into a cylindrical spur, which is rather more than an inch long, and curves under the flower towards the lip. In the two petals a much greater degree of narrowness and shortness is perceptible, and a slight dash of purple. The figure of the lip is an unequal oblong, the lower end being narrowest, while there is a trifling indentation at the extremity, and a similar one on either side. Its colour is a very lively blue, with a darker stripe down the centre; but it changes to brownish-yellow after having been expanded a few days. The flower-spike grows erectly, about two feet in height, and the blossoms are protruded laterally near its summit.

Camèllia japónica; *var.* elàta. Hybrid Camellias have become so astonishingly abundant, and many of them bear such a marked resemblance to each other, that those who would possess every kind now offered, must be content to obtain plants in no respect different from their old favourites, with the sole recommendation of a new name. Thus, we are told by an established Camellia-grower, that the variety at present selling under the appellation of "the King" has been known for years by the title of *Clusiana.* These remarks are not, however, directed to the plant especially under consideration. It was raised by Mr. Cunningham, of Edinburgh, has superior foliage, a very upright tall-growing habit, and bright crimson flowers, which are as well-formed as those of any other sort within our knowledge. Indeed, it is distinct, and particularly splendid.

It may here be observed, that *C. j. Doncklaerii* and *C. j. tricolor* are the most popular flowers of this season, and both appear to deserve the eminence they have attained. The former is a signally meritorious variety; since, under proper management, its blossoms may be rendered nearly as large as those of *C. reticulata,* and their standard colour, as well as the beautiful white stripings, stamp them as far more showy. Messrs. Loddiges, whose distinguished success in the culture of this genus is too notorious to need even mentioning, attribute it mainly to supplying them with a very copious allowance of water in the early months of the year. The close atmosphere of their Camellia-house, and the circumstance of none of the pots in which the plants grow being exposed to the solar rays, may likewise be adduced as concurrent causes of the extraordinary luxuriance of their specimens.

Chorizèma Dicksònii. This promises to be one of the best of the delightful species of *Chorizema,* on account of its combining a tendency to bloom when only a few inches high, with flowers which are barely inferior in size and colour to those of *C. ovata.* It is a slender straggling plant if too much nursed, or placed in an inordinately high temperature; but, when kept in a cold house or frame, and sometimes a little pruned, it may be made quite sufficiently bushy. The leaves are diminutive, linear, and mucronulate, while the blossoms are of a deep crimson, relieved by yellow in the centre. Mr. Knight, Chelsea, possesses flowering plants; and it is decidedly a gem among the Australian flowers with which our gardens are so profusely stocked.

Crìnum undulàtum. As the species of this noble genus are very little known, and inadequately prized, we shall perhaps be contributing to the more enlarged cultivation of the most worthy ones by intimating that flowering plants of the above delightful species may be readily witnessed at Messrs. Henderson's, Pine-Apple Place. The characteristics by which it obtrudes itself on our attention, are the little room it occupies, the shortness of its flower-stalks, the number and large dimensions of its blossoms, and their very delicious odour. The leaves are rather long, but flaccid, and partly pendent, their margins being irregularly undulated, and their colour a rich and shining light green. The flowers are pure white. It flourishes in a warm stove, requiring only a small pot; and plants of moderate size produce several strong spikes of flowers.

Dendròbium macrophỳllum. In our last Number, p. 68, this fine species was accidentally called *D. macrochilum*, and we now wish to rectify that mistake, as the appellation refers to the singular broadness of its leaves.

Grevíllea longifòlia. The curious genus *Grevillea* has been much enriched, as far as respects foliage, by the numerous recent arrivals of seeds from the Swan River Colony. Unfortunately, however, the flowers of most of these have proved inconspicuous, and unsuited to compete with those of the highly ornate shrubs at present in our collections. Where very peculiar leaves are desired, *G. longifolia* will assuredly obtain a place, since its foliage is exactly like that of a *Banksia*. It is of a considerable length, with many deep sinuses on the margin, and the projecting portions acute. Of the blossoms, it can only be said that they are reddish-yellow, but certainly not ornamental. They may be inspected at this time in the greenhouse of Mr. Knight, Chelsea.

Kennedya —— ? An apparently new species of *Kennedya* is flowering at Messrs. Young's, Epsom, which, in the brilliant colours of its flowers, seems to us surpassingly good, although neither the size of these nor its general character is particularly remarkable. Very dwarf specimens are producing their blossoms in the greenhouse, and others, much attenuated, are blooming in the stove; but the former is evidently the proper situation, as the plant is a native of the Swan River Colony. Its stems are shrubby, numerous, and naturally prostrate; but, like those of *K. prostrata*, capable of being trained in an upright position. The leaves have very long petioles, and are trifoliolate, while the leaflets are obcordate, mucronulate, of a more lively green than those of *K. prostrata*, with a few long closely-pressed hairs on the upper side, and a greater quantity beneath, especially on the mid-rib. The flowers are axillary, solitary hitherto, on long peduncles;

the standard is about half an inch wide, of an intensely rich sanguineous purple, with a large spot of very bright yellow at the base, the wings being pure purple, and the keel dark brown, tinged with purple.

LÆLIA CINNABARÌNA. We were happy to observe this scarce and lovely plant in a fine flowering state at Messrs. Loddiges' a fortnight since. Having seen the original specimen, which bloomed with Messrs. Young, of Epsom, two years ago, we were hardly prepared to witness so great an improvement. It has slender tapering stems, averaging four inches in height, and having the aspect of a *Cattleya*. They produce one or two oblong, rigid, strikingly coriaceous leaves on their apex; and from between these the flower-stem issues. This latter is from two to three feet long, bearing the blossoms towards its top. A deep orange-red is their uniform colour; the sepals and petals being narrow, spreading, and similar in shape; and the labellum delicately undulated and fringed. It is a splendid object, and the colour of the flowers is highly engaging.

LÁLAGE ORNÀTA. A year's additional cultivation of this rare and costly plant has undoubtedly contributed to heighten its beauty, or at least to render us less surprised at the extravagant price for which it was sold in 1839. Specimens at Mr. Knight's, Chelsea, have bloomed very profusely this season, and present a more sprightly appearance as they become larger, and more covered with blossoms. It has also flowered in the garden of T. Harris, Esq., Kingsbury, where several plants are possessed, and which, with a rich general collection, an extensive and valuable assortment of noble Orchidaceæ, and a magnificent selection—obtained at a vast expense from various quarters—of the most uncommon Cactaceous plants, are, we understand, to be offered for public sale in the month of June. Cultivators will here have an excellent opportunity of purchasing plants of almost every description, in an admirable state of health.

ÓXALIS BARRELIÈRI. We have so frequently met with this somewhat attractive old shrub in our late tours through the London nurseries, and believe it is so rarely cultivated elsewhere, that a short mention of it may not be superfluous. It is a dwarf evergreen shrubby stove-plant, with pinnate foliage, and pretty yellow blossoms, having a stripe of red in the inside of each petal. For a confined situation, where larger plants could not be placed, its lively-looking leaves, and the abundance in which its flowers are produced, as well as the fact of their unfolding for many months in the year, and especially in winter, render it extremely well adapted.

ZIÈRIA LÆVIGÀTA. The old *Z. Smithii*, although generally valued for the abundance of its blossoms, is completely eclipsed, in point of beauty, by the species here noticed. *Z. lævigata* forms a small dense shrub, with three-lobed leaves, and delightful pinkish white flowers, which are both larger and more attractive than those of its ally. Messrs. Rollison have a plant of it at present blossoming in the greenhouse.

OPERATIONS FOR MAY.

MAY is perhaps the gayest, because the most purely vernal, month of the year. It is the season of both vegetable and animal excitement; the latter being probably in some degree owing to the agreeable influence attending a prospect of flourishing vegetation. The grand transition from dormancy to vigour, from seeming barrenness to lovely verdure, ministers to our senses a delight of the highest order; and fills us with a mild, harmless kind of enjoyment, richly fraught with both corporeal and mental invigoration.

May is not, however, to be spent in luxurious pleasure by the cultivator, notwithstanding its inviting aspect. If he would have his borders well stocked with summer ornaments, this is the time at which they must be filled. The fashionable and very praiseworthy method of employing tender exotics to adorn the flower-beds in the warmer months, enjoins a prompt attention to their transplantation at this period. Plots planted with early flowering Tulips, Erythroniums, Narcissuses, and all the showy objects that blossom in the first part of the season, are now to be divested of their previous occupants, and prepared for a new race. In such cases it is well to leave the soil exposed for a week, turning it several times during the interval, and reoccupying it at the expiration of that term. It is thus rendered light and loose, and the roots of the plants transferred to it can immediately spread themselves in any direction; while weeds are destroyed, and there is an opportunity afforded for killing all insects that may have selected it for their residence.

In transplanting *Verbenas* and other half-hardy plants, the earth of the beds should never be of too nutritive a nature. The object being to induce a liberal production of blossoms, their tendency to grow too luxuriantly when unrestrained at the roots must not be forgotten, and either sand or sandy heath-mould ought to be mixed with the soil of which the plots are composed. To effect the same purpose, all the stronger shoots should be carefully decapitated at the time of planting, and once or twice afterwards, as the necessity may appear to exist. Few think of performing this simple operation, and yet none can be of greater value in the culture of border plants of the class under notice; not only as it keeps them dwarf, and forms the group into a denser mass, but for the incalculable multiplication of flowers it occasions.

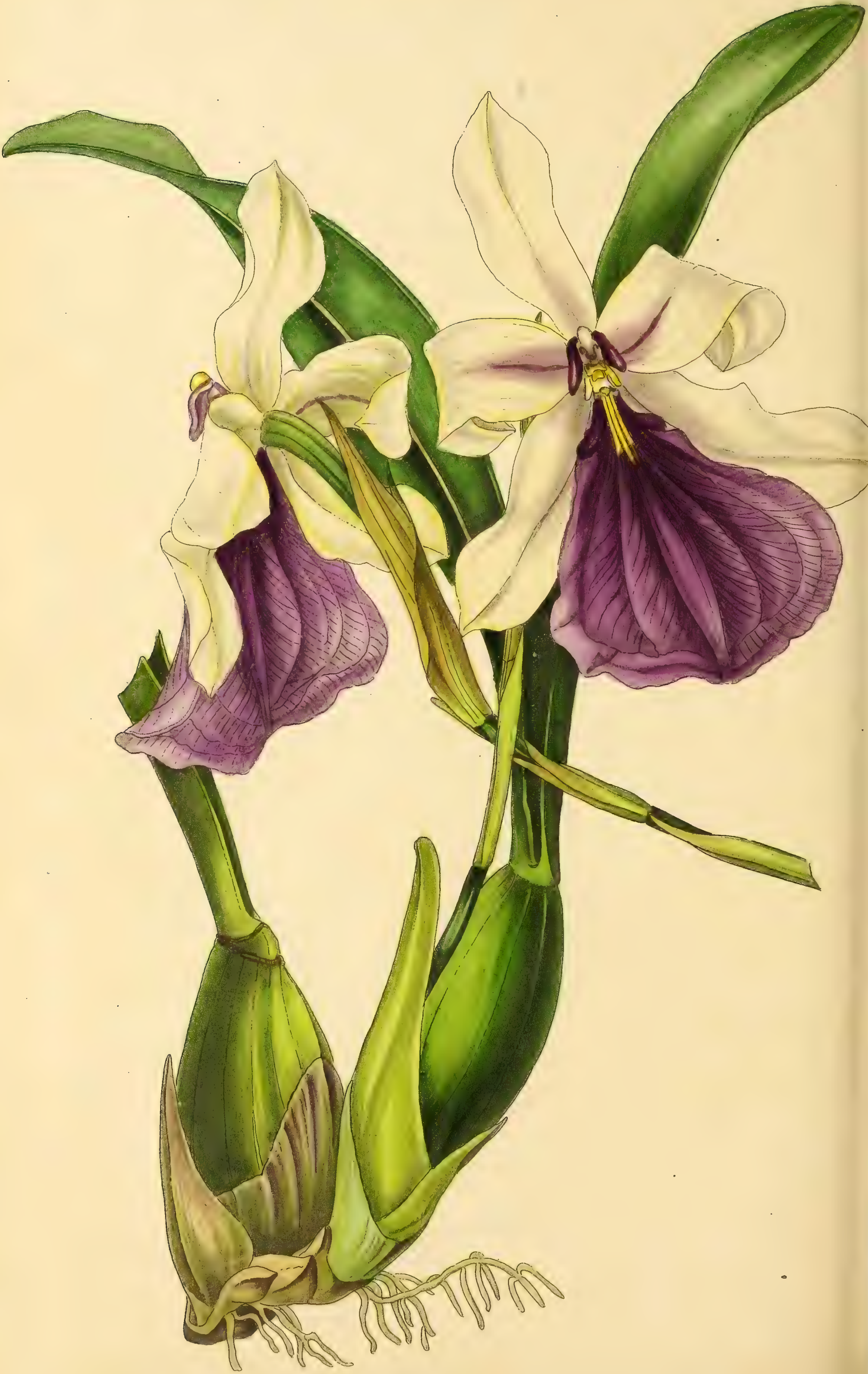
The proper disposition of the roots of plants is a matter likewise too generally overlooked in their transplantation. After releasing them from the pot, it is advisable to shake off all the outer soil, so as to place the growing roots directly in a different and congenial medium, gathering the earth over them with as much caution as if transferring them to another pot. Such a minute direction may seem frivolous; but if this point is not scrupulously observed, the blossoming season may be deferred a considerable time in consequence, and the culturist lose much of the beauty that might be attained.

No flowering plant should be permitted to mature its seeds unless these are required for subsequent use. By cutting off all the flower-stems as soon as the blossoms wither, the disfigurement which would result from their being suffered to remain is avoided; there is no unnecessary expenditure of the plant's juices, and consequent debilitation of the remaining flowers; and, with many species, a succession of blossoms is by this means preserved for a much longer period. Both annuals and perennials are included in this suggestion.

Plants in houses are now in the height of their developments, and require stimulating accordingly. They should be daily syringed, except in those evenings when slight frosts are expected, and largely supplied with water at the roots, but never through the rose of a watering-pot, as the surface is sometimes wetted by this system without actually, or not more than temporarily, refreshing the plant. *Orchidaceæ* and some stove plants will need constantly shading during the day; whereas, all *Cactaceæ*, and exotics of a succulent character, cannot be too much open to the light.

Greenhouse plants of every kind should stand as perfectly isolated as possible, admitting to them a large amount of air, so as to obtain a perpetually renewed supply of it for their subsistence. Most Heath growers are familiar with the practice of often pinching off, between the thumb and finger nails, the tops of those young and weakly shoots borne by the more bushy species. This prevents them from straggling, or exhibiting bare stems, and forces a new and more abundant protrusion of branches, by which the specimen is rendered far dwarfer and more compact. We can see no objection to the extension of the system to other small-wooded plants; and believe that many of the slender species which would be very ornamental were it not for their lank diffuse habits, would derive all the wished-for advantage from a judicious stoppage of their shoots in the growing season.

Climbing plants that are trained to small trellises, and which are intended to occupy only a very limited space, may be aptly subjected to the same treatment. A few prudent removals of the extreme points of the principal and most luxuriant shoots, will cause an immediate and profuse development of buds from their lower portions, thereby filling up all the vacancies that, in the less branching species, would otherwise be left. The most signal benefit of this proceeding would be that from three to six times the number of flowering branches would be formed; and these would both bloom sooner, and bear a larger proportion of finer flowers, than could be at all expected from the leading shoots, if suffered to continue their growth without interruption.



MILTÒNIA SPECTÁBILIS.

(SHOWY MILTONIA.)

CLASS.
GYNANDRIA.

ORDER.
MONANDRIA.

NATURAL ORDER.
ORCHIDÀCEÆ.

Generic Character.—*Vide* vol. vi. p. 241.

Specific Character.—*Plant* epiphytal. *Scape* cylindrical, spreading; scales keeled, cartilaginous, equitant, obtuse, brownish green. *Flowers* large, very showy. *Sepals* pale, greenish white, oblong, apiculate, a little undulated, reflexed at the margin. *Petals* similar in form and colour, but broader, and rather curled at the edges. *Labellum* greatest, roundly wedge-shaped, undulated, continuous with the column, purplish violet at the base, lighter towards the margin, seven-nerved; veins convergent, bowed, coloured, the three central ones crested at the base; crests entire, truncate, middle one shorter, thicker, more elevated, yellow. *Column* short, erect, compressed, the colour of the petals, gibbous, yellow at the base, and connate with the labellum; two wings purple, fleshy, scimitar-shaped.

Synonyme.—*Macrochilus Fryanus.*

Messrs. Loddiges, whose unrivalled collection of Orchidaceæ develops monthly a greater number of novelties than that of any other European establishment, had the honour of first flowering the handsome plant in which the genus *Miltonia* originated; and the fine variety here represented also blossomed in the same nursery during the month of July, 1839. It is but very slightly separated from the species named *spectabilis*, the only difference being a broad purplish band in the centre of the sepals and petals, the former of these organs likewise having a still darker streak down the middle. These deviations, although very perceptible, and imparting a greater degree of beauty to the flowers, we have not considered sufficient to constitute a decided variety, demanding a new designation.

The appearance of *Miltonia spectabilis* is so peculiar, that it may readily be distinguished from the numerous species of *Oncidium* and other genera to which it is intimately allied in habit. It always exhibits a somewhat stunted aspect, the pseudo-bulbs and leaves, presenting a yellowish tinge, wholly different from the luxuriant greenness of most similar plants. This apparent sickliness is by no means displeasing: it is not of that morbid kind which indicates that the plant is severely suffering from improper treatment, but has a golden tint, too obviously natural to be otherwise than attractive.

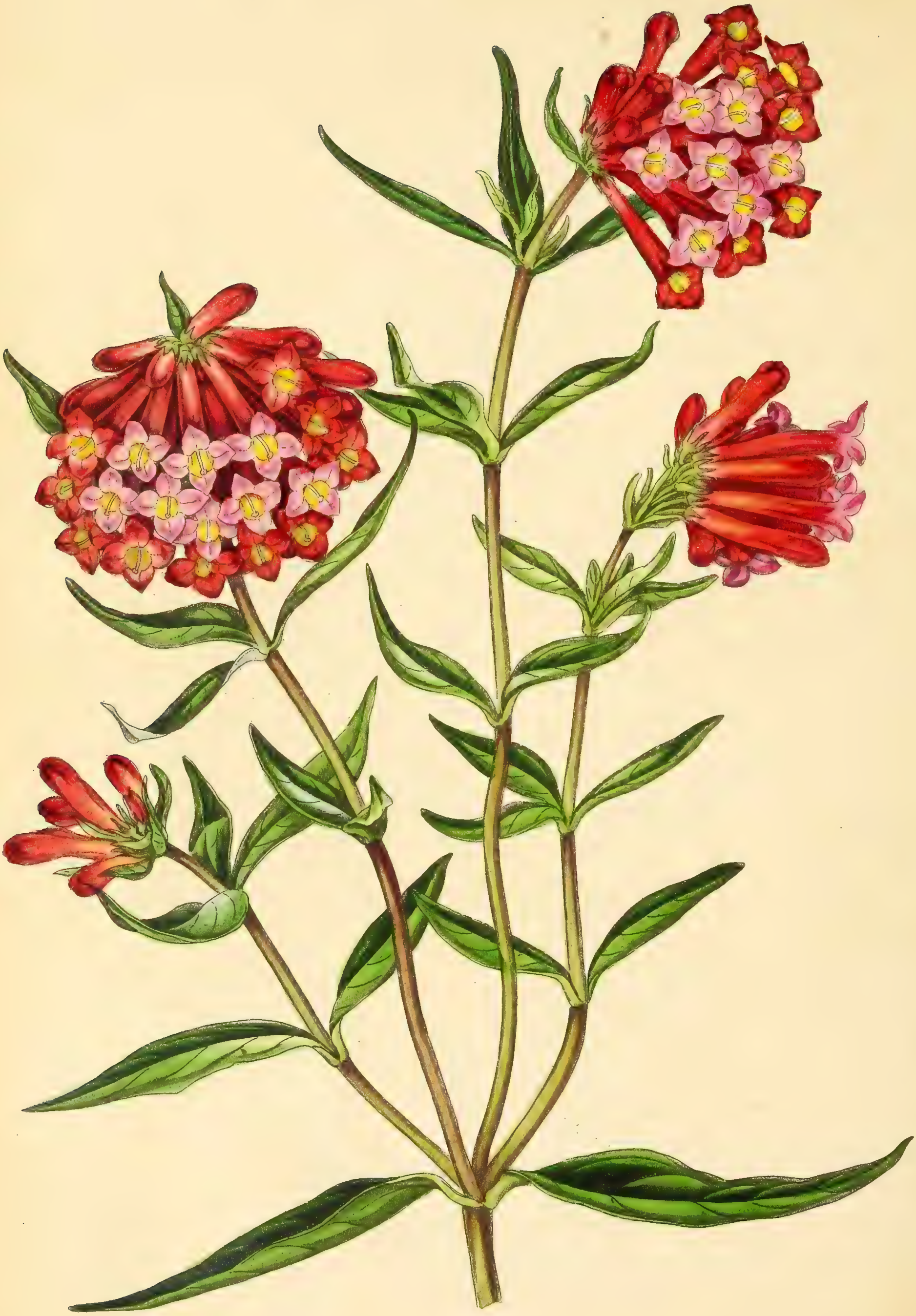
What, however, is lacking in the general garb of the plant, is fully supplied in the splendour of its flowers. The delicacy of the sepals and petals is in itself interesting; and when so richly relieved by the extraordinary size and bright purple and yellow of the lip, it becomes additionally engaging. The stately solitariness of the blossoms is further instrumental in creating an agreeable effect.

The species was imported from Brazil, by Messrs. Loddiges, in 1835, and after blooming with these gentlemen in 1838, it blossomed in several other gardens. Its comparative rarity must still be lamented, for it is yet in only the larger garden-establishments of Britain.

The cultivation of Miltonias is exceedingly like that of Oncidia. From all that we can gather respecting its preferences, the present plant delights in a moderately high temperature, and a humid atmosphere, which latter should be reversed to aridity while its subject is torpid. Although it need not be stinted for pot-room, it must not be placed in too large a receptacle, nor watered too copiously at the roots. Planted in a shallow pot, filled to within two inches of the surface with drainage materials, and the remaining space occupied with fragments of heath soil and potsherds, it will attain its utmost perfection. Perhaps it would succeed equally well on a block of wood.

" *Miltonia* differs from *Oncidium*," says Dr. Lindley, " in its lip being slightly connected with the column, much dilated, and undivided; and from *Odontoglossum*, *Brassia*, and *Cyrtochilum*, in its column being auricled, and its lip not only much larger than the sepals, but also altogether different in form."

The generic title has been chosen to commemorate the patronage bestowed on Natural Science by Earl Fitzwilliam, a nobleman whose well-known support of Horticulture, and enthusiastic love of Orchidaceæ, are deserving of the highest honour; and whose family-name we are happy to see immortalized by so signally meritorious a genus.



Bouvardia angustifolia.

BOUVÁRDIA ANGUSTIFÒLIA.

(NARROW-LEAVED BOUVARDIA.)

CLASS.
TETRANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
RUBIACEÆ.

Generic Character.—*Calyx* with a subglobose tube and a four-parted limb; lobes linear, subulate, sometimes with a tooth between each lobe. *Corolla* funnel-shaped, tubular, elongated, beset with velvety papillæ outside, with a naked throat, and a four-parted spreading short limb. *Stamens* having the filaments adnate to the tube at the base, and free from about the middle; anthers linear, inclosed. *Stigma* bilamellate, exserted. Superior part of the ovarium naked. *Capsule* membranaceous, globose, a little compressed, two-celled, and dehiscing at the cells above; valves semi-septiferous. *Placentas* orbicular. *Seeds* many in each cell, compressed, imbricated downwards.—*Don's Gard. and Botany.*

Specific Character.—*Plant* shrubby. *Stems* roundish, smooth. *Leaves* sometimes in pairs, sometimes three in a whorl, sessile, lanceolate, revolute at the edges, glabrous above, but covered with small hairs beneath. *Corymbs* dense. *Flowers* somewhat drooping. *Calyx* short; segments subulate, equal. *Corolla* red, interior of the lobes of a pinkish hue.

In discussing the merits of the various plants which present themselves to our notice, we have often had occasion to commend dwarfness, as a characteristic at all times attractive. And when any species combines with this a striking display of blossoms, of a rich and brilliant colour, it invariably secures the esteem of the many who acknowledge a susceptibility to floral charms. It is a universal trait in the human composition, to feel fascinated much sooner by a close grouping of showy tints, tastefully arranged, than by any very scattered disposition of the same quantity and variety of hue. Hence, an humble plant, that possesses, besides, a large share of other incentives to our attachment, always excites love in a higher degree, although its loftier neighbours may more certainly command admiration.

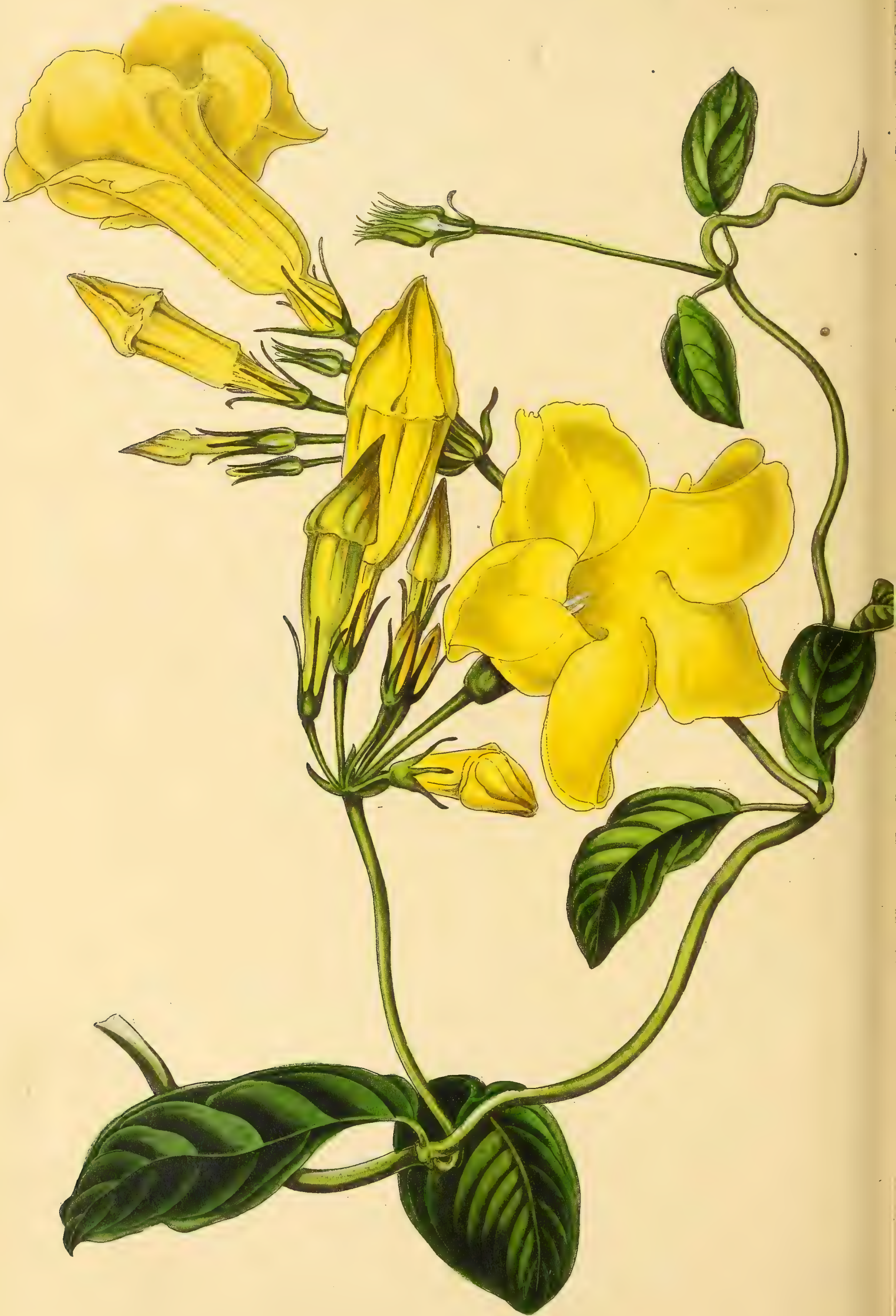
A glance at the genus *Bouvardia* discloses several highly interesting species of the class here described. *B. triphylla* is a recognised favourite with most cultivators. Its culture is, however, strangely on the decline, and it is by no means so commonly seen as it was a few years back. Some culturists seem almost to have forgotten the mode of treatment whereby such splendid exhibitions of its flowers were formerly obtained, as we usually now encounter it in a very unhealthy state. *B. angustifolia* is not far removed from the species just cited. Its flowers are of a slightly paler colour, with a decidedly pinkish hue in the interior of the corolla segments, and much narrower foliage. It grows, moreover, somewhat taller, and the leaves do not appear so liable to be disfigured by disease. Like *B. triphylla*, it is quite an old species, but exceedingly scarce in collections. The specimen from which our drawing was executed was raised in the nursery of Mr. Low, Clapton, in the year 1838, from seeds collected in Mexico, and transmitted to this country. It bloomed in great perfection during the months of August and September 1839.

Those who have abundance of spare space in a stove, and are not thoroughly conversant with the peculiarities of the natural climate in which these plants are found, retain them perpetually in such a structure. Others, again, adopt a contrary system, and, with the view of rendering them more vigorous, as well as of saving trouble, and introducing a new feature to the flower garden, plant them in the open beds in the summer. Neither of these practices is exactly suitable; the former furnishing them with too much heat, and the latter with too unrestricted a supply of water. The intermediate condition is, therefore, the preferable one. Preserved in pots, in the greenhouse, a hardness of wood, a general fertility, and fine neat foliage, are attained, without the unnecessary and injurious elongations, and the scantiness of flowers, which result from a higher temperature, or the turgid and curled leaves which are induced by transplantation to the flower borders.

An open sandy loam, to which a little heath-soil can be added, is the best and most appropriate compost. If enriched with manure, the shoots and leaves will become swollen and sickly, which, while it may easily be mistaken for luxuriance, is a condition much to be deprecated. Where any additional nutriment is really necessary, on account of the sterility of the soil, a small portion of well-pulverized leaf-mould should be incorporated.

Propagation is performed by cuttings of the immature wood, planted in pots of sandy loam, and the pots plunged in a moderate hotbed, protected by a hand-glass.

Dr. Chas. Bouvard, after whom the genus was named, was formerly superintendant of the Royal Gardens at Paris.



Echites suberecta

ECHÌTES SUBERÉCTA.

(SUBERECT ECHITES.)

CLASS.
PENTANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
APOCYNÀCEÆ.

Generic Character.—*Follicles* two, long, straight. *Seeds* pappose. *Corolla* funnel-shaped ; throat naked.

Specific Character.—*Plant* an evergreen twining shrub. *Leaves* distant, opposite, rather ovate, mucronate, downy beneath. *Peduncles* many-flowered. *Corolla* salver-shaped, yellow ; segments reflexed, equal ; throat of the tube furnished with five inclosed scales.

Synonyme.—*Hæmadictyon suberecta.*

It is rather surprising that, notwithstanding this plant was introduced to Britain so long ago as the year 1759, it is now scarcely to be met with. The length of time that has elapsed since its primary importation, may in some measure account for such a circumstance; but we suspect that the intensely poisonous nature of its juice has been more influential in suppressing its diffusion. A knowledge of the remarkably energetic properties concealed beneath its extremely graceful character, lively foliage, and large, pale-yellow, but interesting flowers, induced us to obtain a figure from a specimen which blossomed in the stove of Mr. Knight, Chelsea, in September 1839; presuming that the drawing and description of an elegant plant, whose effects on the animal system are so peculiarly fatal, could not fail to gratify our readers.

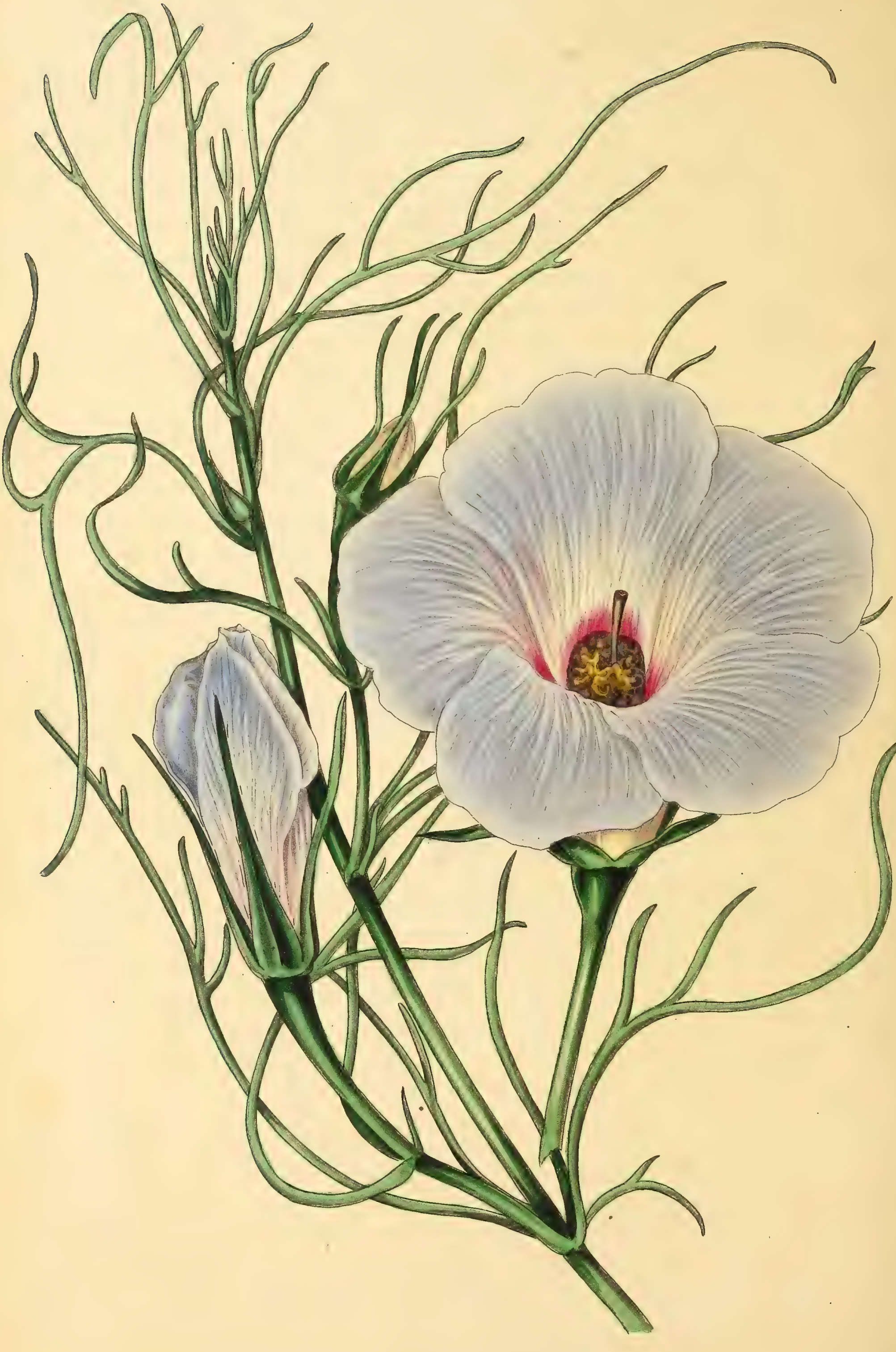
E. suberecta inhabits the savannas and other exposed places in Jamaica and St. Domingo, but is much more common in the former island. It is there called Nightshade or Savanna-flower, on account of its deadly poison, and the locality in which it abounds. A very noticeable feature in its natural constitution is, that while vegetation generally is paralyzed or perishing from drought, it preserves the beautiful verdure of its leaves, and even continues to flower in the greatest vigour. Travellers assert that when its branches are eaten by dogs and mules, they expire a few minutes after having devoured them. This would lead many cultivators to reject it, from a fear of the consequences that might ensue from an accidental absorption of its juice by the hand, and its conveyance from thence to the mouth, or through other parts of the body. But no danger of this kind need be apprehended, as it appears quite innocuous unless bruised, and great caution should be exercised in this particular.

It is a stove climbing plant, barely strong enough to support itself, and requiring to be trained to the rafters or roof of the house. It flourishes best in a light loamy earth, flowering more abundantly when kept in a pot than if it be planted out in a border. Water must never be too liberally supplied, since it occasions a rapid debilitating growth ; and excessive heat is inimical to its beauty, as it renders the stems slender, and the joints and foliage too distant. In a somewhat moist stove at Mr. Knight's nursery, it is grown very successfully, and produces its blossoms throughout several of the autumnal months.

Cuttings are procured with some difficulty, the tendency to branch freely not being one of its characteristics. This disposition may, however, doubtless be superinduced by pruning ; and the cuttings, when obtained, will root if planted in a sandy soil, placed in a moderate heat, and covered with a hand-glass.

Altogether, it is an ornamental plant, and besides the profusion and magnitude of its flowers, the great purity of their colour is a particular recommendation. We have not observed it in any metropolitan nursery save that above mentioned, though it may most likely be obtained of all respectable nurserymen for a trifling cost.

Echis, a viper or snake, forms the basis of the generic appellation, this bearing reference to the smooth twining shoots of the plant, which have been compared to the coils of that reptile. The term *suberecta* alludes to the nearly erect habit of the species, and its partial capability of sustaining its own weight without extraneous aid.



Hibiscus multifidus.

HIBÍSCUS MULTÍFIDUS.

(MANY-PARTED LEAVED HIBISCUS.)

CLASS.
MONADELPHIA.

ORDER.
POLYANDRIA.

NATURAL ORDER.
MALVÀCEÆ.

Generic Character.—*Vide* vol. iii. p. 147.

Specific Character.—*Plant* a deciduous shrub. *Stem* smooth, roundish, much branching, rather succulent. *Leaves* divided down to their base into numerous linear segments, and these again sometimes subdivided, or producing unequal lateral lobes, quite glabrous. *Calyx* composed of five equal, long, lanceolate, acuminate segments, almost the length of the corolla. *Corolla* of a very pale azure colour, tinged with crimson at the orifice, and deepening into a richer crimson towards the base.

No one can question that the explorers of the Swan River Colony have contributed more towards supplying our gardens with new plants, than has been done since such extensive importations of seeds were made from New Holland. And though the number of novel species now in a seedling state amounts to several hundreds, we have not hitherto witnessed one in flower which promises to be more ornamental than the handsome *Hibiscus*, of which a figure is annexed. Circumstances unfavourable to its full development rendered the flowers rather tardy in expanding last autumn; but, when those are more propitious in another season, it will most probably blossom as liberally as any of its congeners.

It will be recollected, by persons acquainted with the genus, that the flowers of the majority of its species open very slowly, and are exceedingly fugitive. If this plant, therefore, should prove to be of a similar habit, no wonder need be felt. We do not anticipate that such will ultimately be the case. The probability is only suggested to prevent future disappointment.

Divested of all considerations concerning the expansion of its inflorescence, its outline and leaves are eminently pleasing; while the blooms, when properly unfolded, are superlatively lovely. The light delicate azure which constitutes the standard colour of the latter, is shown to excellent advantage by the finely-rounded and gradually opening cup of the corolla, and merges beautifully into a lively crimson towards the centre, which is again prettily contrasted with the yellow and brown of the staminal processes.

Nothing can be more symmetrical than the contour of the specimen which was cultivated at Messrs. Henderson's, Pine Apple Place, and bloomed there for the first time in August 1839. It begins branching within about six inches of the roots, and proceeds to the height of three or four feet, forming a regular bush of a conical shape. The deeply divided leaves also assist in filling up this outline, and impart to the whole an airy aspect which is quite alluring. Messrs. Henderson were favoured with seeds in 1837 by Captain Mangles, R. N.; and the plant which flowered in their greenhouse furnished the subject of the present plate. We have reason to believe that it had not before blossomed in Britain.

The ordinary culture of greenhouse plants would seem in all respects suitable. It should be potted in fresh loam, taken from the surface of pasture-land, and exposed to the weather for a year previous to its employment. A trifling addition of silver sand may likewise be desirable. Care should be taken to water it when a necessity for liquid nutriment really exists, and not at any stated periods. Very large pots must be avoided, in order to stimulate the flowers to develop themselves earlier in the season.

Prepared cuttings strike with tolerable readiness, if not subjected to too much moisture, which is apt to produce mouldiness and decay. Seeds are, however, sparingly ripened, and they will assuredly be more numerous when the plant is brought into flower a month sooner. They should be sown, immediately after maturation, on a gentle hotbed, and the seedlings potted directly the first leaves are perfected.

We have reason to expect that many valuable hybrids will result from the cross impregnation of this species with some of the larger-flowering kinds. The practice has now been carried to such a great extent, that so admirable an opportunity as the present subject affords of improving the varieties now in cultivation, will certainly not be disregarded by hybridists.

By turning to the 148th page of the third volume of this work, the reader will find the generic name explained. The specific designation is expressive of the minute divisions of the leaves.

ANALYSIS OF SOILS.

We now conclude the subject which we quitted at page 59, No. 75. The Reverend Author of the successful prize Essay completes (as we have seen at p. 59) his processes of separation by repeated washings of the fine substances deposited in the lowest partition of his compound sieve, in two separate glass tubes; the first of which retains the finest aluminous earth, while the other receives the *humus*, or light floating vegetable matter, contained in the several washings of the fine substances.

This *humus* is at length deposited on a filter, through which the water passes. —"The mud which remains is dried over the fire and weighed. This is the most important portion of the soil. The fine earths in tube No. 1 will consist of very fine particles of sand, clay, and perhaps carbonate of lime. The sand will appear deposited in the bottom of the tube; the clay (*alumina*) may be easily diffused in the water above it, by stirring it carefully with a small rod without touching the sand. It may then be decanted off with the water into another tube, (No. 3,) and allowed to settle: this part of the operation may be carried to a greater degree of perfection, by great care, and by examining the results occasionally with a small microscope; but for all common practical purposes, it is sufficient to separate the vegetable earth from the mineral, and the visible particles of sand from the finer."

We cannot sufficiently thank this able essayist for his exertions to simplify analysis: heretofore recourse has always been had to pure chemistry; and consequently ninety-nine practical men of a hundred—among gardeners as well as farmers—have been utterly deterred from experimentizing. Still, however, we shall see, as we proceed, that an analysis can never be made complete without the aid of chemistry; although that process which proved the most knotty and intractable to the chemist (we mean the dissolution and separation of the pure clay, or *alumina*) is relieved from its greater difficulty by the able manipulation of Mr. Rham. We render, therefore, our unqualified thanks to that gentleman, for the assistance which he thus has afforded to the analyst.

Saline substances are traceable in soil; to detect these, we read that—"All the water in which the earths have been diffused and washed, is collected and passed through filtering paper, and then set over the fire in a common saucepan. It is boiled away gently until it is reduced to a small portion which begins to look turbid. The complete evaporation is finished in an evaporating-dish, as slowly as possible, and the residue is the soluble matter contained in the soil. It will be sufficient to dry and weigh this, as its further analysis would require more skill and chemical knowledge than we suppose in the operator. *Salts* may be detected by the taste, or by the crystals formed in the evaporation; but unless there is a decided saline taste, the whole may be considered as soluble *humus*, and the immediate fertility of the soil depends greatly on the quantity of it."

The next step recommended, is to collect, dry, and separately weigh, the coarse grit, the finer sand, the earths in the tubes, the *humus* on the filter, and the matters evaporated in the dish. The total weights of all should nearly equal the gross weight of the dried earth previous to its being washed: but some loss is inevitable.

" But the analysis is not yet completed, there may be a portion of carbonate of lime, in the form of sand, or of finely divided earth, mixed with the other earths.

" To ascertain this, each portion, excepting the *humus*, is put into a separate cup, and a little muriatic acid, diluted with four times its weight of water, is poured on it. If there is any effervescence, it shows the presence of carbonate of lime; diluted acid is then added gradually as long as the effervescence is renewed by the addition. When this ceases, and the water continues to have an acid taste, more pure water is added, and each portion separately filtered, dried, and weighed. The loss of weight in each, gives the quantities of carbonate of lime dissolved by the muriatic acid, and which has passed with the water in the form of muriate of lime. The different weights being now collected, the result of the operations may be set down."

The writer observes in a note, and very correctly, that the muriatic acid will dissolve some iron, and a portion more or less of alumina. This admission, and the very circumstance of employing muriatic acid, proves, beyond a doubt, that chemical agency is essentially necessary to effect a good analysis.

The detection and separation of the chalk (carbonate of lime) is the leading chemical process in ordinary analyses by re-agents, and without it there must be errors in the deductions. Still, however, the mechanical analysis by Mr. Rham will be found very instructive, and ought to be frequently resorted to; we will not, therefore, insist farther upon the necessity of chemical agency. We have quoted very copiously, and ought not, perhaps, to proceed further; but to do the author's object justice, we shall take the farther liberty to follow him in his recital of an actual experiment which was most likely conducted by himself: he says—

" As an example of an analysis may be useful to those who desire to try the proposed method, we will add one actually made under very unfavourable circumstances, and without any apparatus.

" The only instruments at hand were scales and weights, of tolerable accuracy, three glasses, a foot long, and an inch and quarter in diameter, belonging to French lamps, a tin coffee-strainer, a piece of fine gauze, and a very fine cambric pocket-handkerchief. A little muriatic acid was obtained at the apothecary's. The soil to be analysed was taken from a piece of good arable land, on the slope of the Jura mountain, in Switzerland. Its specific gravity was 2.358 nearly. 500 grains of the dry soil were stirred in a pint of water, and set by in a basin.

" To save time, 500 grains more of the same soil were weighed, after being dried over the fire. It was well pulverized with the fingers, and sifted through the coffee-strainer, then through the gauze, and lastly through the cambric handkerchief. Some portion was left behind at each sifting. The two first portions were washed in the strainer and the gauze; the residue was sand of two different degrees of fineness, which, when dried, weighed, the coarser 24 grains, and the next 20 grains. The earth and water which had passed through the strainer and the gauze were now strained through the cambric, and left some very fine sand behind, which, dried, weighed, and added to what had remained in the cambric when sifted in a dry state, weighed 180 grains. All that which had gone through the cambric was mixed with water in a jug, and stirred about. The heavier earth subsided, and the lighter was poured into one of the lamp-glasses, which had a cork fitted into it, and was placed upright. In about two minutes there was a deposit, and the lighter portion was poured into a similar glass, where it was left some time to settle. In this, a slower deposition took place, and, in about a quarter of an hour, the muddy water was poured off into a third glass. The three glasses were placed upright, and left so till the next day. In the first glass was some very fine earth, apparently clay; in the second the same, but more muddy; and in the third nothing but thin mud.

"The contents of the vessel were left to deposit the sediment on each; this sediment was poured on a plate by taking the cork out of the tube, which was cleaned with a piece of fine linen which had been carefully dried and weighed. Each plate was examined occasionally, and some of the lighter part that floated on the least agitation was poured from one plate to another, until it was thought that all the *humus* had been separated. Most of the water could then be poured off without muddiness, yet it was passed through a dried and weighed paper filter. The earth was slowly dried, by placing the plates on the hearth before a good fire until they were quite dry, and so hot that they could not be easily held in the hand. The deposit left in the jug was poured on a plate"—(plates with lips would be a great improvement, and convenient to the operator)—"and a little muddy part which was observed, was poured off with the water on another. This was again transferred, and the finer added to that which was in the second plate.

"Collecting now all the separate portions, there were found—

Of coarse sand	24	grains
finer sand	20	,,
very fine sand	180	,,
clay deposited in the jug and first plate and dried .	240	,,
deposit in the second plate . .	24	,,
,, on the paper filter	1½	,,
,, on the linen rag . . .	½	,,
	490	

leaving 10 grains to be accounted for."

Thus our essayist had reduced his soil to its integral elements, as far as manipulation could effect his object, but he could not determine what were the quantities of the alumina, chalk, or carbonate of lime, oxide of iron, and pure silex, nor the relative proportions in which these were combined; he therefore had recourse to one chemical agent—the muriatic acid, by which he was enabled to dissolve that ingredient which his judgment led him to conclude might exist in considerable quantity.

"Each of the first four portions was put into a separate cup, and muriatic acid diluted with water was poured upon it. An effervescence appeared in all of them, which continued on the addition of diluted acid, and when the contents of the cups were stirred with a piece of tobacco-pipe. They were left till the next day, when all effervescence ceased, and the calcareous part seemed entirely dissolved."

Pure water was added to dilute muriate of lime, the clear fluid was then poured off, and the remaining earth was strained through filtering paper, and dried on plates before the fire. The results were, that—

Of 24	grains of coarse sand .	20	remained.	Dissolved by the acid	4
20	„ finer sand . .	17	„	„ „	3
180	„ very fine sand . .	162	„	„ „	18
240	„ of the earth on the first plate	182½	„	„ „	57½
464		381½			82½

Thus, 82½ grains were dissolved, the greater part of which was most probably carbonate of lime. But as we have frequently observed that some earths contain more oxide of iron than calcareous matter, we are constrained to infer that the analysis was defective, in so far that many grains of the 82½, might have been oxide of iron.

Nevertheless, this essay has thrown much light upon the subject; the investigation of soils can now be effected by persons who have no opportunity to appeal to chemistry; and by practice, analyses may be rendered still more simple, yet equally satisfactory. It only remains to state that two grains of soluble substances were obtained by evaporating the water of the washings, and "thus the loss was reduced to eight grains."

CULTURE OF PELARGONIUMS.

(*Continued from page* 88.)

Propagation.—Every cottage cultivator, who displays a few Pelargonia in his windows, imagines that nothing is more easy than their multiplication, by simply inserting cuttings in the soil at almost any period, and affording them some degree of transient shade. Notwithstanding this popular impression, as the methods of increasing all kinds of exotic plants are always more complicated and refined than their ordinary culture, if there be a series of particular processes required in the general treatment of this tribe, it is palpable that its propagation must need a still greater share of attention.

Pelargonia, say some, root as readily as willows; and cuttings certainly strike with great facility if fitly managed. But it is in the latter point that their aptitude for the production of roots is entirely involved. They may, perchance, form healthy plants without the application of heat, though a very considerable quantity of them will be lost in the experiment.

The chief conditions which determine the successful propagation of these plants are, that they be taken off at a proper season, that their wood be in a suitable state, that they be not altogether deprived of their leaves, and be kept in a moist genial atmosphere, until perfectly established. We will cursorily consider each of these circumstances.

Although spring seems in many respects the most appropriate time for effecting this operation, universal experience and practice pronounce it unfavourable, principally because the crude consistence of the shoots exposes them to facile destruction after severance, and prevents them from at once forming vigorous independent specimens. These are strong objections. Nevertheless, as a partial counterbalance, there is the whole subsequent summer to mature their growth, and impart both luxuriance and solidity. And since autumn cannot so fully secure such concomitants, it may be well, where there is no scruple with regard to checking the parent plants, to obtain and rear a small portion of cuttings in the vernal months. The admirable condition of the young wood in early autumn, when it is exactly intermediate between hardness and succulence, and the additional advantage afforded by the actual and necessary removal of the branches at that period, are the prime indicators of its appropriateness; while, by the creation of an artificial temperature, the want of more prolonged natural excitation may be nearly compensated. The time, therefore, at which the autumnal pruning is accomplished, is precisely that at which cuttings should be prepared and planted.

By a due regard to the preceding direction, a fitness in the substance of the branches will be effectually ensured. Yet, a selection of the more suitable parts of these becomes necessary. All the lower and indurated portions must be discarded, not only on account of the increased stimulation they would need, and the prolonged period requisite for their further development, but likewise because there are fewer and weaker buds in such situations than on the higher and younger parts. Many prefer the extreme summits of shoots, and, when practicable, reject the more ripened wood. The adoption of this system leaves no wounded surface exposed to the air, and invariably retains a sufficient quantity of excellent foliage: but, by rendering the growth perfectly simple and erect, it entails the reduction of the plant in spring, in order to induce a bushy habit. The buds of the joints almost immediately below the summit are, on the other hand, usually stronger than the crowning one, and their protrusion laterally at so early a stage, constitutes the specimen more or less dwarf and symmetrical, at a much sooner epoch of its existence.

Leaves being as useful as roots in the economy of plants, and by the exercise of their valuable functions contributing greatly to the extension of these last, or to their positive formation when they are not already present, should be scrupulously preserved on those detached members which are wished individually to acquire a regular and complete set of operative organs. The largeness of the foliage of Pelargonia appears, however, to demand that some of it shall be displaced, lest too great an extent of evaporating surface enervate the cutting, and cause it to perish. Two or three large leaves may be left, with propriety, on a cutting taken from beneath the extremity of the shoot, and all the smaller ones on such as are terminal.

The length of each cutting must be decided by the nature of the branch, and the distance between its buds. Four joints will be sufficient in most cases, severing the shoot just above the upper bud, and closely under the lower one. Slips are scarcely obtainable from Pelargonia, since the base of their branches is usually too hard for propagational purposes. Where short shoots are abundant, and the old specimen is to be reduced below the point from whence they are extracted, they may often be procured, and should be ever employed. In other instances, both the top and the bottom of the cutting must be cut as smoothly and horizontally as possible; for, the more unequal the separation, the greater amount of susceptible surface will be placed in contact with the soil and air, and the chances of detriment accruing will be proportionally increased.

When the cuttings are in readiness, shallow pots, of a moderate size, should be filled with light loamy soil, mixed with sand, for their reception; or, if common pots are used, they must have at least three inches depth of potsherds in the bottom. In this soil, the cuttings should be planted firmly, about an inch and a half, or two inches apart, and then placed in a propagation house, or hotbed frame, beneath large hand-glasses, each covering several. If convenient, trouble and space will probably be economized, by preparing a small bed in the house or frame, and inserting the cuttings at once into it, but in small groups, so as to allow protection by hand-glasses as before. The usual operation of potting into small pots, and afterwards shifting into larger ones, with a rather richer soil, will follow the growth of the cuttings; and when their roots are strong enough to place them beyond danger, they may be subjected to a succession of different atmospheres, till they can eventually be kept for a time in the open air, and then housed and treated as the older plants.

Metropolitan practice.—In the outset of this essay, we proposed adverting to the leading items in the treatment pursued by those London cultivators, whose specimens exhibited at the meetings of various societies have been so much admired and applauded. After the lengthened remarks we have furnished on our own system, these necessarily including most matters of prominent import, a notice of other than striking deviations becomes needless.

Had we to describe the *rationale* of the greatest growers' plan in a few words, we should represent it as a perpetual application of nutrimental or stimulating substances during the growing season. They employ, first, a richer soil than we have recommended; they next place their plants in larger pots; and lastly, continue changing them as long as they manifest a disposition to grow. We have sometimes seen the specimens in potsfull which were sixteen inches across.

In their general management, they keep their plants on an elevated stage; admit air with great jealousy in the months of April, May, and June; arrange the specimens at about two feet and a half from each other; and prune them very rigidly, in order to obtain an immense number of branches, all of which are fastened to stakes, and disposed with the greatest regularity and precision.

To this method and its consequences we have several objections to urge. By forcing Pelargonia to such an exuberant state, the quantity of flowers is essentially lessened, and some detraction must inevitably take place in the brilliance of their colours. We pretend not to dispute that the plants grown in a few suburban collections present a splendid spectacle when in blossom. This is undeniable. We merely affirm that the same specimens would, if less highly excited, produce a greater number of more dazzling flowers. We further deprecate their very artificial appearance. Thoroughly admitting that congruity and symmetry of outline are most desirable, we still think that the general easy aspect of nature should be maintained; and when a Pelargonium exhibits almost geometrical stiffness of proportion, it suffers greatly in our eyes. The enormous size to which the plants are mostly grown is the sole remaining drawback we shall now name. It is not alone the extra room they occupy,—though this is by no means a trifling consideration,—but the reflection that less plants would, individually and aggregately, be more showy, which impels us to caution all culturists, except those whose time, materials, and means fear no exhaustion, against acting upon the scheme which many persons have deemed so pre-eminently congenial.

RUDIMENTS OF THE NATURAL SYSTEM OF BOTANY.

NO. III.

We have already seen that vascular or flowering plants are separated into two large groups, called *Exogenous* and *Endogenous*, which are characterized by a peculiar arrangement or structure of the elementary organs. Before we proceed to trace and define the numerous subdivisions which botanists recognise in these larger classes, we must establish a familiar understanding with the reader concerning the precise application of terms to the most conspicuous of these organs, and trust that the space we shall now appropriate to that explanation will not be considered an unnecessary preliminary.

It is customary to speak of a multitude of matters connected with botany without the least precision in the use of language. This is a failing we warmly deplore; and that ourselves may not be guilty of similar negligence, a trifling definition is to be attempted. It must not be disguised, however, that we have no pretensions to the unravelment of the secrets of nature. We seek not to enter her inner shrine, or to startle her admirers with profound disclosures. Satisfied to be the humble attendants of a noble train of philosophers, we desire only to collect their most salient observations; to draw together, as to a focus, the more brilliant of their discoveries; and, by the concentration of their common light, to diffuse a few rays of solid information amongst those who desiderate such knowledge.

No alarm need be felt by the least learned in the prospect of being carried through a host of refined researches. We contemplate the entire avoidance of anything assimilating to microscopical scrutiny, and purpose confining our simple specifications to the external and distinctly perceptible organs of vegetable bodies.

To enter upon this field in an orderly manner, and survey each portion according to the arrangement in which it naturally develops itself, we shall suppose the seed of a flowering plant deposited in the soil, and examine the various stages in its transformation or advancement till it gives birth to another seed. Roots and stems are perhaps protruded nearly at the same time, but as it will best suit our purpose to give priority to the former, the assumption, however questionable, may be allowed.

Roots are distinguished from stems by their invariable tendency to increase downwards, and seclude themselves from light, and by their having a greater or less portion of the surface of their extremities in a state of immaturity, this being capable of imbibing fluids. The anomalous instances in which roots are seen resembling branches, and producing buds, shoots, and leaves; or those more inscrutable cases wherein they appear purely aerial, and never seek to bury themselves in the earth; are no disproof of the position above laid down. Even the roots of epiphytal Orchidaceæ, or air plants, subsist only in a shaded position, and generally incline to a darkened recess, while their direction is always towards the earth's centre, and they have spongy absorbent points, thence called spongioles, which are not permanent organs, but simply the incomplete and rudimentary state of the newly-formed tissue, by which the greater part of their nutriment is received. The feature of most importance in the distinction of roots and stems is, that if their proper position be inverted while they are growing, stems will immediately curve upwards to the light, and roots, as soon as they reach the surface of the earth, will return again in a downward course. The bulb, the corm, and the rhizoma, which are often considered roots, are properly modifications of the stems. The only other form employed in determining natural orders, is the fasciculated root, in which the fibres are unusually large and fleshy, and diverge regularly from the stem in a rather slanting direction, as in the Dahlia.

It has been shown how the internal characters of stems mark the two first divisions of the natural system; and we have here to deal with their external variations. They are either arboreous, shrubby, subshrubby, or herbaceous. The term arboreous is applied to trees which commonly bear only one stem, issuing directly from the roots, and rising to a considerable but indefinite height. Casual circumstances sometimes occasion the production of more than one stem to each tree, but this is quite accidental. Shrubs differ from trees in having a great number of dwarf stems individually connected with the roots, and constituting a low bush. Like trees, they have a hard, woody, durable axis, but of a much less diameter and altitude. Suffruticose or subshrubby plants are such as have a ligneous stem at the base, losing annually all their upper portions. Herbaceous plants possess a still more fugitive axis, as every part of their apparent stem decays yearly, to be supplanted in the following season by new emanations. Those stems which are short, thick, or fleshy, and creep along on or near the top of the ground, bearing many shoots on their upper surface, and roots from beneath, are called rhizoma. They are found in some Iridaceæ, Orchidaceæ, and other related orders, but are never to be discovered in any exogenous plants. Bulbs and corms, which are both peculiar forms of stem, belong likewise to Endogenæ, and assist in isolating several orders. Bulbs comprise that kind of depressed conical stems which are composed of successive series of succulent layers or scales; each of these being analogous to a dilated incrassated petiole or leaf-stalk, very often developing leaves on its apex, and producing buds (which in time expand into other bulbs) from the axil at its base. The tulip and onion are excellent examples. Corms, again, are much flatter, quite solid, without any separate scales, and reproduce themselves from the summit. The most common illustrations are the Crocus and Ixia.

When the stems of Vascular plants have attained a few inches in height, they put forth a quantity of thin, flat, variously-formed dilatations from the bark, popularly designated leaves. These, by being the most highly diversified of all vegetable organs, and at the same time so exceedingly palpable to the senses as to need no examination by optical instruments, are, where their peculiarities are established as a guide, the best criteria for ascertaining the precise order to which a plant belongs. The number and direction of their veins, their position with respect to each other, the extent to which they are divided, and the existence or lack of little pellucid dots, which, when held up to the light, exhibit a much thinner and almost transparent tissue, are a few of their characters that impart distinctiveness to certain natural orders.

It is no trifling argument in favour of the natural system that nature has given to many plants composing its entirely artificial orders, so striking a similarity in the conformation, outline, or venation of the leaves, that, independently of the floral or fructiferous organs, which are not seen on some species except when in a natural state, their exact place in the arrangement may be ascertained through such means alone. When we arrive at the description of particular orders, this fact will be at once perceived, and, we would hope, duly estimated. Some plants, besides having the ordinary leaves, develop one or more small appendages called stipules, at the lower end of each, which frequently serve to detach individual tribes. They are not to be identified with the lateral expansions in the leaf-stalk of the rose, but always proceed immediately from the stem, and are, indeed, real leaves in a very stunted or deformed condition.

FLORICULTURAL NOTICES.

NEW AND RARE PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR MAY.

Bérberis empetrifòlia. For adorning rock-work in a tolerably exposed situation, no object can be more suitable than this exceedingly neat little plant. If care be taken to preserve its roots from drought in summer, it will spread over a large spot, and display its pretty yellow blossoms during an extensive part of the season. In gardens, it forms a low trailing plant, often of a somewhat sickly habit; but under Chilian skies, and in its natural circumstances, it is said to constitute "a rigid, robust, erect bush, which must be extremely beautiful." It is found in various parts of South America, but chiefly in Chile, whence it was introduced to this country, through Captain King. "It would be worth trying the effect of a conservatory, or of a Devonshire or Cornish climate upon its constitution." Young specimens are obtained either by layers or seeds. The former must be made in August, and will be two years in rooting thoroughly; seeds should also be sown in the same month. *Bot. Reg.* 27.

Calostèmma cárneum. Like *C. luteum*, which was noticed in our last number, this showy bulbous plant produces its flowers on the summits of stout stems, in dense umbels. Major Sir Thomas Mitchell originally discovered the species in April 1836, on a chain of rugged mountains in Australia. By this gentleman it was presented to the Horticultural Society, and flowered in one of their pits, at Chiswick, in September last. Botanically considered, it is distinguished from its allies by wanting the teeth on the crown or inner portion of the flower which supports the stamens, the space between the latter being, in the rest of the family, either a little rounded or slightly jagged. Popularly, it may be recognised by its bright pink-coloured flowers, which are half pendent, very numerous, and ornamental. Its treatment is exactly the same as that of common Cape bulbs. *Bot.Reg.* 26.

Centaurèa pùlchra. Dr. Hugh Falconer, superintendant of the Botanical Garden, Saharunpur, sent this interesting annual to the Horticultural Society; but it is supposed not to be a native of the north of India. "With us it is a beautiful hardy annual, in general appearance resembling the queen of our wild flowers, the *Centaurea cyanus* of cornfields; but it is much more woolly, dwarfer, a good deal branched, with shorter radial florets, and the pappus of its fruit is long, discoloured, very unequal, and at least as long as the seed-vessel itself." Its principal attractions are the clear, brilliant blue of the exterior florets, the rich crimson of the disk, and the silvery glittering appearance of the involucre, the margin of the scales of which is delicately fringed. It is managed as other ordinary annuals, and blooms abundantly through nearly the whole summer and autumn. *Bot. Reg.* 28.

Cymbídium péndulum. From specimens transmitted by Dr. Wallich to the Hon. and Rev. W. Herbert, and flowered successfully in that gentleman's collection, the drawing now under remark has been prepared. The species was first found by Dr. Roxburgh, on trees, in the province of Sylhet; Dr. Wallich afterwards met with it in Nepal. It approaches nearest to *C. aloifolium* in habit; but is essentially different in its flowers. "Its leaves are from two to three feet long, stiff, leathery, obliquely obtuse, and strongly furrowed; at the base they form a distichous tuft, like that produced by the equitant leaves of an *Iris*. The flowers exceed in size those of any of the species nearly allied to this; they are, however, of a dirty yellowish-brown colour, which diminishes their beauty, notwithstanding the clear red and white of the labellum." As the flower-spikes are pendulous, it appears to require suspension on a block of wood, from the roof of the Orchidaceous house. *Bot. Reg.* 25.

Dáhlia glabràta. A new species of *Dahlia* is not altogether a novelty in the present day, as several have latterly been introduced. *D. glabrata* is, however, considered perfectly distinct. Mexico is its native country, and it was procured from thence by G. F. Dickson, Esq., by whom seeds were given to the Horticultural Society. Its leading characteristics are lilac flowers, with an apparent dash of purple in the centre, and very long roots, which are of uniform thickness. Dwarfness is also one of its peculiarities, and it is conjectured that by repeated impregnation with *D. scapigera*, (another new species,) a race of Dahlias, possessing a constantly dwarf habitude, and thus far superior to those now cultivated, may ultimately be obtained. It is better to cultivate this as a half-hardy annual, saving the seed each year, and allowing the roots to perish. Its blossoms are developed from the end of July till the arrival of frosts. *Bot. Reg.* 29.

Grevíllea dùbia. This would seem to be one of the most attractive species of the singular genus *Grevillea*. "Mr. Brown considers this plant scarcely specifically distinct from his *Grevillea punicea*; Rœmer and Schultes repeat the doubt, and Sprengel unites them." Dr. Graham states, however, that *G. punicea* "is distinguished from this by its leaves being broader, larger, and minutely dotted, but otherwise glabrous on the upper surface, where also the marginal nerves are less conspicuous; the raceme, too, is less dense, and the style longer." If the colour of the flowers is correctly represented in the Magazine before us, this may likewise be added as a peculiar trait, it being of a pale pink. The shrub grows about five feet high, branches profusely, and bears a great number of its pleasing rose-coloured blossoms in close clusters to the end of the season. *Bot. Mag.* 3798.

Monachànthus ròseo-álbus. Sir W. J. Hooker has here retained the generic name *Monachanthus*, more from a regard to consistency, than a conviction that it ought to be separated from *Catasetum*. Of the species he remarks, "several pseudo-bulbs of this remarkable and very pretty plant were sent from Pará, in Brazil, to Mr. Murray, of the Glasgow Botanic Garden, in the early part of last year, by Mr. Campbell, and there is scarcely any period since that some one or other of them have not been throwing up the flowering stems, and exhibiting their delicate blossoms of a white colour, the lip tipped with red, and banded with the same colour in the inside, while the margin at the base has a deep red fringe, much longer than in any species I have ever seen." The pseudo-bulbs are of the usual description; and the flower-scape rises to the height of two feet, bearing from twenty to thirty of its curious blossoms. *Bot. Mag.* 3796.

Odontoglòssum maculàtum. A very handsome orchidaceous plant, imported from Mexico, by G. Barker, Esq., and recently flowered by that gentleman. "It is one of the prettiest of the family, because of its large two-coloured spotted flowers and drooping habit, and seems to have much the manner of growth and constitution of an *Oncidium*." The pseudo-bulbs are short, with only one leaf on the apex, but several others clasping their base. The flowers are borne in pendulous racemes. Deep brown is the colour of the interior of the sepals, and they are green externally: the petals and lip are yellow, mottled with reddish brown. It will doubtless thrive best on a log of wood. *Bot. Reg.* 30.

Verbáscum taúricum. Decidedly the most ornamental species of *Verbascum* with which we are acquainted; not only for the rich colours of its blossoms, but for its noble habit and foliage. Sir W. J. Hooker will not positively assert that it is a genuine species, but it has every character of such. It is supposed to have been sent from the German gardens, to Dr. Graham, of the Edinburgh Botanic Garden, where it bloomed in the open border in August 1839. The flowers are very abundant, large, of a brilliant purple, which merges into a much darker hue towards the middle, and below which, again, there is a pretty yellow ring. It is, probably, a biennial, and of the most simple culture. *Bot. Mag.* 3799.

NEW, RARE, OR INTERESTING PLANTS IN FLOWER IN THE PRINCIPAL SUBURBAN NURSERIES.

Aristolòchia ciliàre. A plant of this singular new species, received by Messrs. Henderson, of Pine-apple Place, from the Glasnevin Botanic Garden, and believed to have been imported from Brazil, is blooming in great profusion at the nursery of the above gentlemen. It is not more than three feet high, seems to require little support, has very regular and handsome foliage, and is wonderfully prolific of flowers. These last are small, produced singly on slightly drooping peduncles, with an erect tube or pouch of a pale green colour, which expands into a lip of dark brown, rather checkered with green, and surrounded by a conspicuous fringe of large long hairs, each with a nearly globular gland at its summit. The odour of the blossoms, though disagreeable, does not diffuse itself through the atmosphere, and hence it is not detected unless sought. It appears to be a suffruticose plant, with a partial tendency to climb, and demanding the temperature of a stove. The abundance, as well as the curious lip, of the flowers render it interesting.

Brachycòme iberidifòlia. Under this name a pretty Swan River plant is now flowering in the open border at Mr. Low's, Clapton. It cannot yet be determined whether the species will prove of annual or perennial duration; but the former is most probably its true character. From the extremities of a number of very slender branches, which proceed from several equally weak stems about nine inches in height, it bears a great quantity of showy star-like flowers, which are usually solitary and of a light pinkish lilac hue, with a trifling shade of pale blue. Perhaps, when better known, and brought into flower later in the season, it will be found a very handsome border-plant, and deserving of general cultivation.

Cyclògyne canèscens. Another product of the Swan River Colony, also blossoming in the Clapton nursery, where it was obtained from seeds germinated in 1839. The plant has much of the habit of an *Astragalus*. The average height of its stems is about eighteen inches, the leaves being pinnate and greyish white, on account of their being clothed with down. Its propensity to flower is very remarkable, since even the smallest stems are protruding spikes of bloom from the axil of every leaf. The flowers are likewise highly beautiful; their principal colour being a bluish purple, with darker purple wings. If kept in a cold greenhouse, or planted in the open border, it will doubtless constitute a most valuable embellishment in either of these positions throughout the greater part of the summer.

Dendròbium moschàtum. We invite attention to three specimens of different kinds of *Dendrobium* which are at present displaying their gaudy blossoms in the orchidaceous-house of Messrs. Loddiges, Hackney, for the purpose of pointing out the distinction that exists between them. *D. moschatum*, which is perhaps the loveliest of the three, has very delicate whitish sepals and petals, which are tipped with a beautiful blush colour; the lip is brownish purple, fringed with whitish pink. The sepals and petals of *D. cupreum*, which has been justly separated by Messrs. Loddiges, have a decidedly reddish brown tint, and are plainly distinguishable from those of *D. moschatum*. *D. calceolare*, again, has flowers of a brilliant orange colour, with a much smaller and dark-brown labellum, the margin of which is of the same hue as the sepals. Although these species are rarely seen in flower, moderately large plants may be incited to bloom by keeping them in a dry condition during winter.

Dillwýnia clavàta. One of the most valuable of the shrubby plants lately introduced from the Swan River Colony. It has narrow, erect, hairy leaves, which are far from being so scattered as those of some other species, and quite sufficiently cover the stem. The blossoms, which are somewhat similar in colour to those of *D. glycinifolia*, but rather darker, have a standard or upper petal, which is particularly broad in a horizontal direction, and proportionally much narrower vertically, with a little depression in the middle. The species may now be seen blooming in the greenhouse of Mr. Knight, Chelsea, where an apparently new *Pultenæa* from the same district, and having pure yellow flowers, with dark-green rigid foliage, is also in blossom.

EPIDÉNDRUM CINNABARÌNUM. The splendid *Lœlia cinnabarina* is very little superior to the present plant, either in the size or colour of its flowers. It is exceedingly like *E. Schomburgkii*, both in general habit and inflorescence; but its stems are somewhat weaker, and the blossoms are of a larger size, as well as of a rather different hue, combining a perceptible tinge of crimson. It was imported from Pernambuco by Messrs. Loddiges, in whose collection plants are flowering in a very superior manner. On the whole, it is almost preferable to *E. Schomburgkii*, and ranks with the finest members of the genus.

MÁLVA CAMPANULÀTA. This elegant *Malva* is beginning to develop its blossoms at Messrs. Henderson's, Pine-apple Place, with the greatest freedom. The whole plant is covered with conspicuous hairs, and the stems attain the altitude of nine inches or a foot. The radical leaves are divided almost to the base into seven or eight principal segments, which are again subdivided indefinitely, the lobes being mucronulate at the points. A spike of flowers crowns each stem, bearing from eight to ten or more blossoms, which are pale pinkish lilac, of a campanulate form, and having perfectly erect petals, without any recurvation at the margin. Probably the species will succeed in the open ground through the summer months. If so, it merits a place in every collection.

PLATYSTÈMON CALIFÓRNICUM. It is worthy of note that this charming little annual has been discovered to be perfectly hardy, since seeds scattered accidentally by the winds last autumn in the Epsom nursery, have produced plants which stood unprotected all the late winter, and the strongest of which are exhibiting their pretty lemon-coloured semidouble blossoms in the most perfect vigour at this time. This circumstance gives additional interest to the species, and renders it capable of being employed extensively as a spring-flowering plant. It also encourages the hope that many other *Californian* annuals will, if properly tested, disclose an equal degree of hardihood.

RHODODÉNDRON GUTTÀTUM. It is scarcely possible to say, among the multitude of hybrid Rhododendrons, which are the most entitled to regard. Where, however, the white-flowering kinds are desired, we have not met with any to surpass the one above-named, and only a single variety (*R. multimaculatum*) which can be compared with it. The chief defect in many hybrids of this genus is the lack of a due quantity of spots to create a pleasing contrast. In both the varieties we have here noticed, the spotting is particularly distinct; that in *R. multimaculatum* being more aggregated, and occasionally running together into blotches, while in *R. guttatum* the individual spots are so clear that they might easily be counted. The latter plant is adorning the conservatory of Messrs. Rollison, Tooting; and its ally is blossoming in the open beds of several nurseries. Both are, we believe, thoroughly hardy; and both are admirably adapted for ornamental purposes.

OPERATIONS FOR JUNE.

If each month of the year were to receive a name according to the predominant state of vegetation at that period, all would agree in designating June the month of flowers. And as the condition of plants at any season will always furnish data for their treatment, it may be useful to inquire how specimens in a flowering state should be managed, so as to perpetuate their display, and promote the prime purposes of the cultivator.

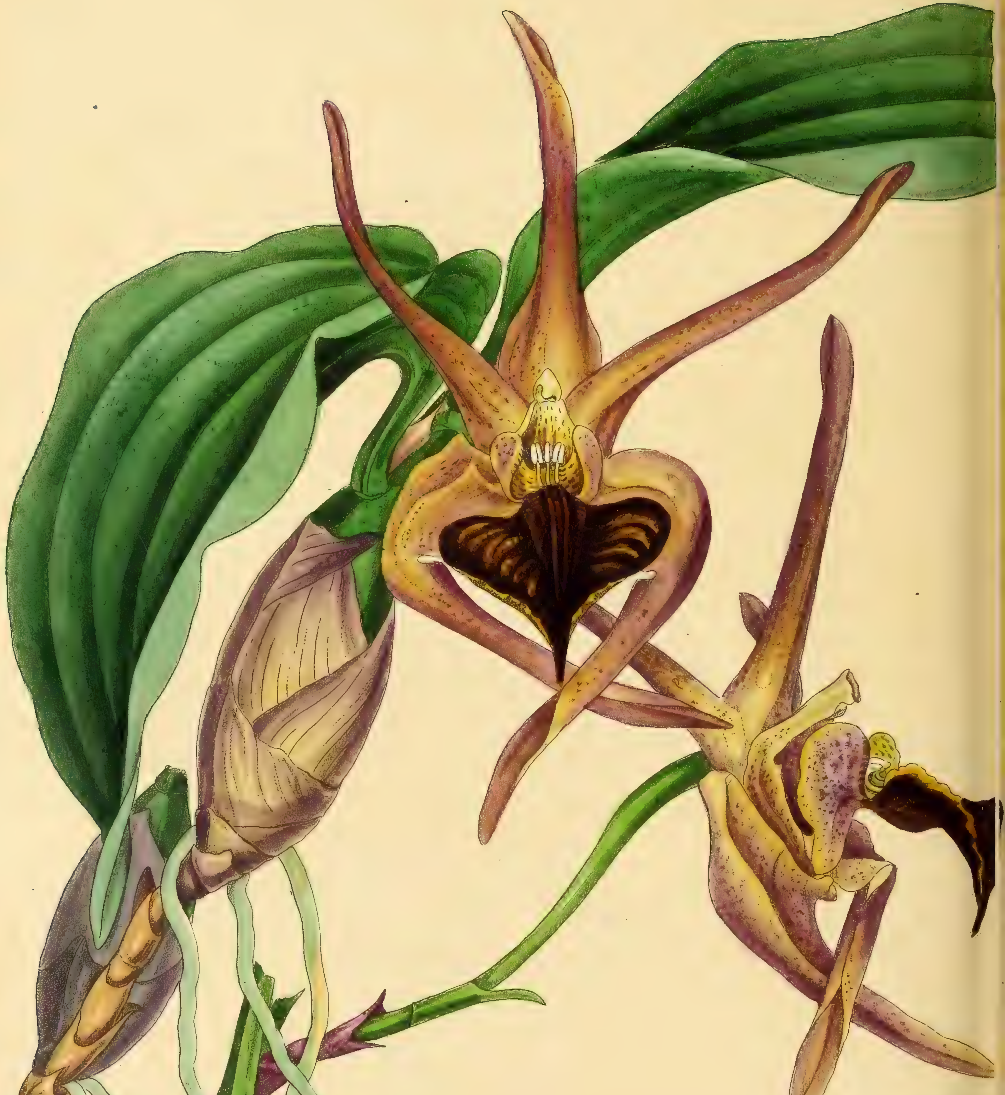
There are numbers of species that blossom simultaneously, but at very different stages of their growth. Thus, many exotic shrubs produce distinct blossom-buds from the old stem, which are expanded ere the leaves are thoroughly developed; while others bear their flowers on the summits of the newly-formed shoots. In the former case, the inflorescence is the precursor of further developments; in the latter, it indicates a cessation of actual growth. Notwithstanding this disparity, the treatment of both classes is exceedingly similar, as the one requires solar influence to elicit its activity, and the like agency is as needful to perfect the accretions of the other.

Of the details, much, after all, has to be determined by a consideration of the culturist's objects. If he wish to ripen the seed of a plant, he cannot keep its flowers too greatly exposed. Should he, again, be desirous of retaining the flowers as long as possible, without any regard either to the specimen producing them or to seed, it must be placed in a cold shaded position, and all the decayed blossoms removed as they wither. As Orchidaceæ usually bloom at a period when much light is unnecessary for them, they can be transferred to a drawing-room without suffering the slightest detriment. All other choice flowers that are wished to remain long in perfection should be shaded with thin canvass, which has a most conservative effect on the blossoms themselves, and is by no means hurtful to the plants.

For the flower-garden, where the fashionable system of filling the beds with annual and other plants prepared in a secluded situation is pursued, we would recommend that these be reared in pots. In some collections, it is customary to sow dwarf annuals in a retired part of the kitchen-garden, and after thinning them while very young, to leave the remainder till the flowers begin to appear. They are then taken up, with as much earth as will adhere to their roots, and planted in clumps of the flower department. So great is the injury sustained by this untimeous shift, that the plants never recover from it, and thereafter constantly present a sickly aspect, without blooming either finely or profusely. The grand purport of the method is by this means frustrated. If, instead of this, the specimens were planted by twos or threes, in small pots, and these plunged to their rim in light soil, they might be transplanted anywhere, and at any epoch of their growth, with the greatest facility.

Lupines, Hollyhocks, and a variety of tall-growing herbaceous plants, must, in order to preserve them against subsequent heavy rains, or violent winds, be immediately and effectively supported with stakes. Nothing tends more to create a slovenly appearance than the neglect of this operation, and no excuse will exonerate the cultivator from the disgrace it entails. We can always determine the keeping of a garden by this simple circumstance, and obtain some notion of the gardener's taste. In passing a band round a simple stem, but particularly when it embraces more than one, every leaf should be left perfectly free, and the natural habit of the plant strictly maintained. In fact, its erectness, and the regular arrangement of its stems or branches, must be attained without disclosing any of the agents in the work, otherwise it might almost as well have been left to casualties. Heat and moisture are the great desiderata in the stove and orchidaceous house during the present month. Those who consult only their corporeal convenience, adopt every practicable measure for reducing the temperature of these houses in the day; but excessive heat is positively demanded for most species. By rendering the air perpetually humid, it is almost incredible to the unobservant how striking a difference is occasioned to the human feelings. And when it is added that such a condition is precisely that in which the plants most luxuriate, the propriety of the practice will not be doubted. A dry air is always oppressive to animal life, and is only desirable for vegetation when it is likewise cold, and vital energies are dormant. It being much easier to retain atmospheric humidity when shade is afforded, and most tropical plants flourishing best in a lightly shaded spot, a canvas covering should also be provided in the glare of the day. Ventilation is further necessary to purify the air, and a trifling degree of it will even be occasionally essential to repress and regulate the heat.

For the greenhouse, light, air, and water, are the chief requisites. In watering, the syringe should be very freely used, at least every alternate evening, and due care must be taken to guard against the supply being merely superficial, since, from the hardness of the surface, it sometimes escapes down the sides of the pots, without ever penetrating the soil.



Dendrobium amplum.

DENDRÒBIUM ÁMPLUM.

(AMPLE DENDROBIUM.)

CLASS.
GYNANDRIA.

ORDER.
MONANDRIA.

NATURAL ORDER.
ORCHIDÀCEÆ.

Generic Character.—*Vide* Vol. iii. p. 77.

Specific Character.—*Rhizoma* creeping, scaly. *Pseudo-pulbs* ovate, scaly, bearing two leaves. *Leaves* ovately-oblong, emarginate, petiolate. *Flowers* solitary, long-stalked, axillary, proceeding from the midst of two oblong petal-like bracts, yellowish-purple, spotted within. *Sepals* ovate, acuminate, obtuse ; *petals* narrower. *Labellum* articulated with the base of the column, three-lobed, middle one falcated, ovate, crenulated, acute, dark brownish-purple ; lateral ones abbreviated, rounded ; plates of the central lobe three, of which the intermediate one is shortened. *Ovary* almost three nails long, with a solitary ovate bract at its base.

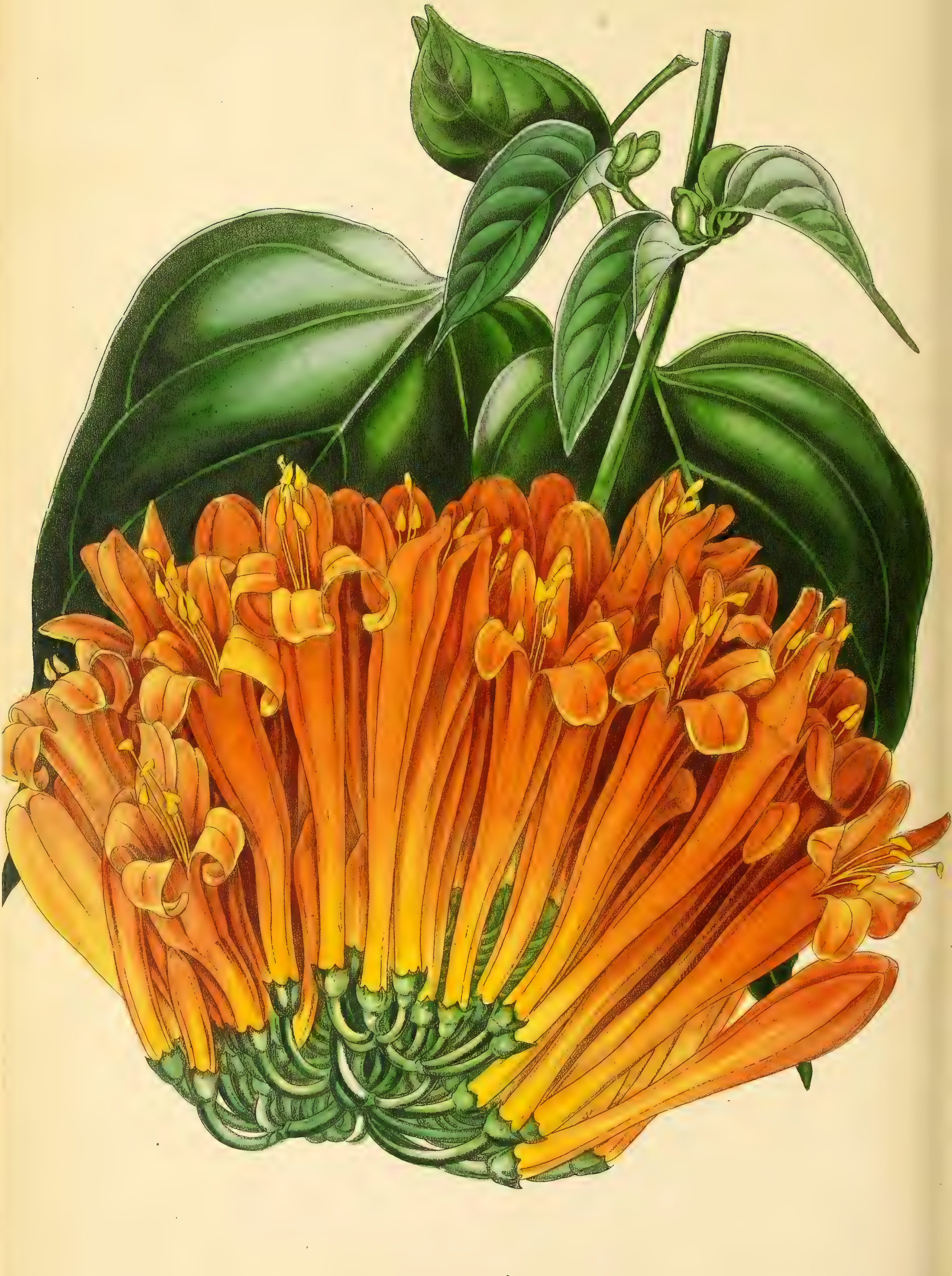
In remarking upon the numerous species of *Dendrobium* of which we have furnished figures, it has been shown that the genus comprises plants which, for convenience, may be very naturally divided into three distinct groups. Retaining this classification, our acquaintance with the species at present calling for consideration compels us to add another division, which, while it in some degree approximates to the pseudo-bulbous class including *D. aggregatum*, *Jenkinsii*, and others, differs in having an ascending rhizoma, the pseudo-bulbs of which are very remote, and individually protrude for themselves a number of roots, capable of acquiring sustenance by the absorption of aerial elements.

D. amplum is, as will be seen by our plate, a very singular species ; so singular, indeed, as to occasion some doubts regarding its actual affinity to the more familiar forms of its congeners. On this point, Dr. Lindley, than whom no one is better versed in these matters, speaks of its near assimilation to the genus *Bolbophyllum* in habit, but states that it can by no means be associated therewith, while the established characters of the latter are maintained. Beyond the peculiarity of its appearance, which is of no importance with respect to its generic relation, and would never be regarded by botanists, the tip of its curious solitary flowers departs from the usual shape of those of *Dendrobium*, and exhibits an outline which to us seems most like that of a heart, with a particularly pointed extremity. This is, however, an insufficient deviation to raise it to the rank of a new genus, and it is therefore still assigned to *Dendrobium.*

Messrs. Loddiges, in whose inexhaustible storehouse we were favoured with the opportunity of examining the specimen here depicted, imported the species from the East Indies a few years since, and succeeded in causing it to perfect its flowers in the month of October 1839. It was met with in great abundance on the Khoseea hills, by Mr. Gibson, His Grace the Duke of Devonshire's collector, and the paucity of plants in this country is consequently rather surprising. Probably, among the many packages which reach England from the Calcutta Botanic Garden, this will ultimately be more liberally introduced; for in addition to the very remarkable novelties in its structure, it is both an interesting and ornamental epiphyte.

As is customary with the members of this tribe, its mode of growth will dictate the manner in which it should be cultivated. At Messrs. Loddiges', the lower pseudo-bulbs are planted in pots, in a light heath soil, well blended with potsherds, and each stem or rhizoma is supported in a nearly erect posture by slender stakes. The nutriment thus derived from the earth, consisting chiefly of water and its constituents, is undoubtedly scanty, and the aerial roots must greatly assist in conserving health, to which the moist atmosphere which these gentlemen keep essentially tends. In drier houses, it could be fastened to a block of wood, and each new development secured thereto, covering its roots with sphagnum moss. After flowering, it should be located in a dry situation for the winter, and again introduced to a hot humid house in spring.

By tying a little moss round the roots of the upper and younger pseudo-bulbs, and slightly stimulating them for a short period, they will be rendered fit for detaching, and the rhizoma can afterwards be safely severed. In this case, the old lower bulbs that are left, will most likely put forth other new ones on being placed in a favourable atmosphere.



Bignonia venusta.

BIGNÒNIA VENÚSTA.

(LOVELY TRUMPET-FLOWER.)

CLASS.
DIDYNAMIA.

ORDER.
ANGIOSPERMIA.

NATURAL ORDER.
BIGNONIÀCEÆ.

Generic Character.—*Calyx* campanulate, five-toothed, rarely entire. *Corolla* with a short tube, a campanulate throat, and a five-lobed bilabiate limb. *Stamens* four, didynamous. *Lobes of anthers* divaricate. *Stigma* two-plated. *Capsule* silique-shaped, two-celled; having the dissepiments parallel with the valves; seeds disposed in two rows, imbricated, transverse, with membranous wings.

Specific Character.—*Plant* a climbing shrub, with a glabrous greenish bark, which has longitudinal projecting ribs of a whitish-brown hue. *Leaves* opposite; lower ones ternate, and destitute of tendrils; upper ones in pairs, and furnished with tendrils; leaflets oblong-ovate, obtuse, deep-green, smooth. *Corymbs* terminal. *Flowers* very numerous and dense, of a light orange colour. *Calyx* villous, short, five-toothed. *Corolla* clavately funnel-shaped, with five spreading segments; the two upper ones nearly erect; the three lower ones more distant, recurved. *Stamens* ascending; filaments inserted near the base of the throat. *Anthers* yellow, oblong. *Germen* green, round.

Were it possible to bring together all the most ornamental objects which have from the remotest ages engaged the talent and affections of floriculturists, we are persuaded that there would be a new era in the art, and that the choicest collections would assume quite another aspect. As with the noble and the gifted among the human race, there are many lovely individuals which, in spite of every effort on the part of those who appreciate their worth, lie buried in the all-absorbing tomb of time, few evincing a readiness to put forth a hand and rescue their merits from the obliviousness with which they are apt to be regarded.

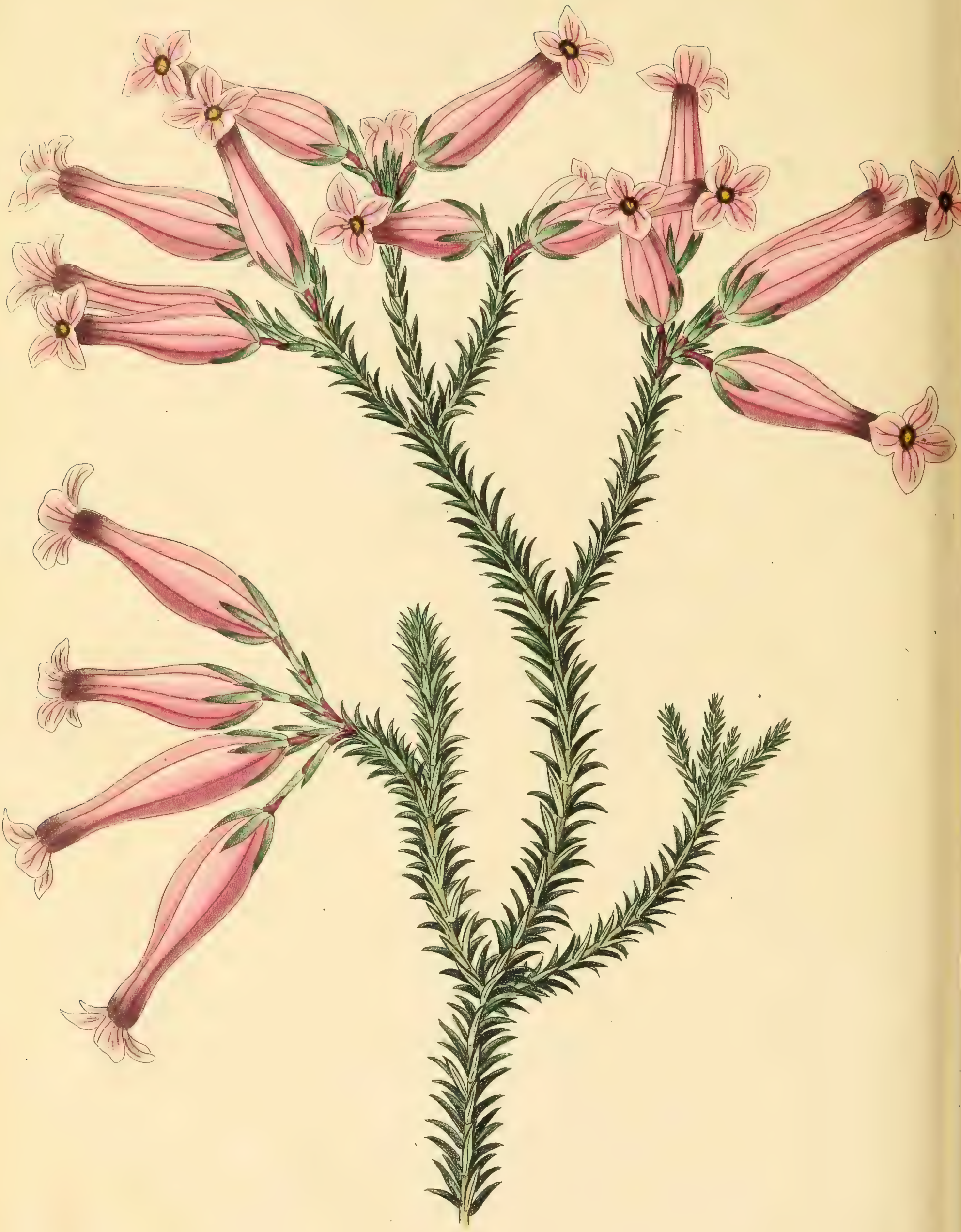
We have no pretensions to the performance of the above generous office for those of our own species; but in the floral sphere, we are ever on the alert to select such plants as appear to be most notoriously and improperly neglected, and endeavour to restore them to the *status* they once enjoyed. In this pursuit, we ofttimes find ourselves most richly rewarded, and are assured that our subscribers are often gratified by the result of our researches. An extraordinary instance, in which the superlative value of the subject has failed to preserve it from the grossest inattention, is herewith offered.

Calling in the month of October last at the seat of H. T. Hope, Esq., Deepdene, near Dorking, Surrey, our astonishment and admiration were very forcibly elicited by a plant of *Bignonia venusta*, which was then flowering in the stove. It was trained along a simple spar of wood, near the back of the house, within a foot of the roof, and the main stems extended to the length of between thirty and forty feet. From these there were probably about three hundred lateral branches of different lengths, depending at pretty regular intervals, at the extremities of which, clusters of flowers, similar to that exhibited in our plate, displayed their truly golden glories, and created a scene beyond measure enchanting. We may observe, that while some of the bunches were rather less than the one we have chosen, many were much larger; and although the plant had been in bloom nearly a month, and numbers of blossoms had faded, the quantity which we have above mentioned was in full perfection, and almost as many more clusters were in the bud state. As we were kindly permitted to bring away specimens, the drawing here supplied has been prepared from them, and with a little allowance for the impracticability of exactly imitating the glowing orange colour of the natural flowers, it may be relied on as an excellent representation.

Those who happen to possess this plant, will be anxious to know how its propensity to flower was so successfully manifested; and we recommend all to whom it is unknown immediately to procure it, since nothing could exceed in richness the gorgeous spectacle we have already faintly described. In the winter of 1838-9, disappointment being caused by the long period which a specimen had stood in the bed of the stove without flowering, it was cut off about three feet from the base, with the intention of wholly removing it in the succeeding year. During the ensuing summer it branched most luxuriantly, forming the whole of the stems of which we have spoken; and in September, the first of a splendid series of blossoms was unfolded. The only secret in its culture, then, is the pruning; and if this be prudently practised on plants of four or five years old, there cannot be the least doubt of corresponding consequences.

It strikes readily from cuttings, and prefers an enriched loamy soil.

Bignonia was named by Linnæus in memory of Abbé Bignon, librarian to Louis XIV. of France.



Erica Macnabiana.

ERÌCA MACNABIÀNA.

(MR. MACNAB'S HEATH.)

CLASS.
OCTANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
ERICÀCEÆ.

Generic Character.—*Vide* Vol. vi. p. 3.

Specific Character.—A hybrid plant, with hard-wooded branches, short, dense, imbricated, partially reflexed foliage, and very long, tubular, pink-coloured flowers, which are inflated towards the lower end.

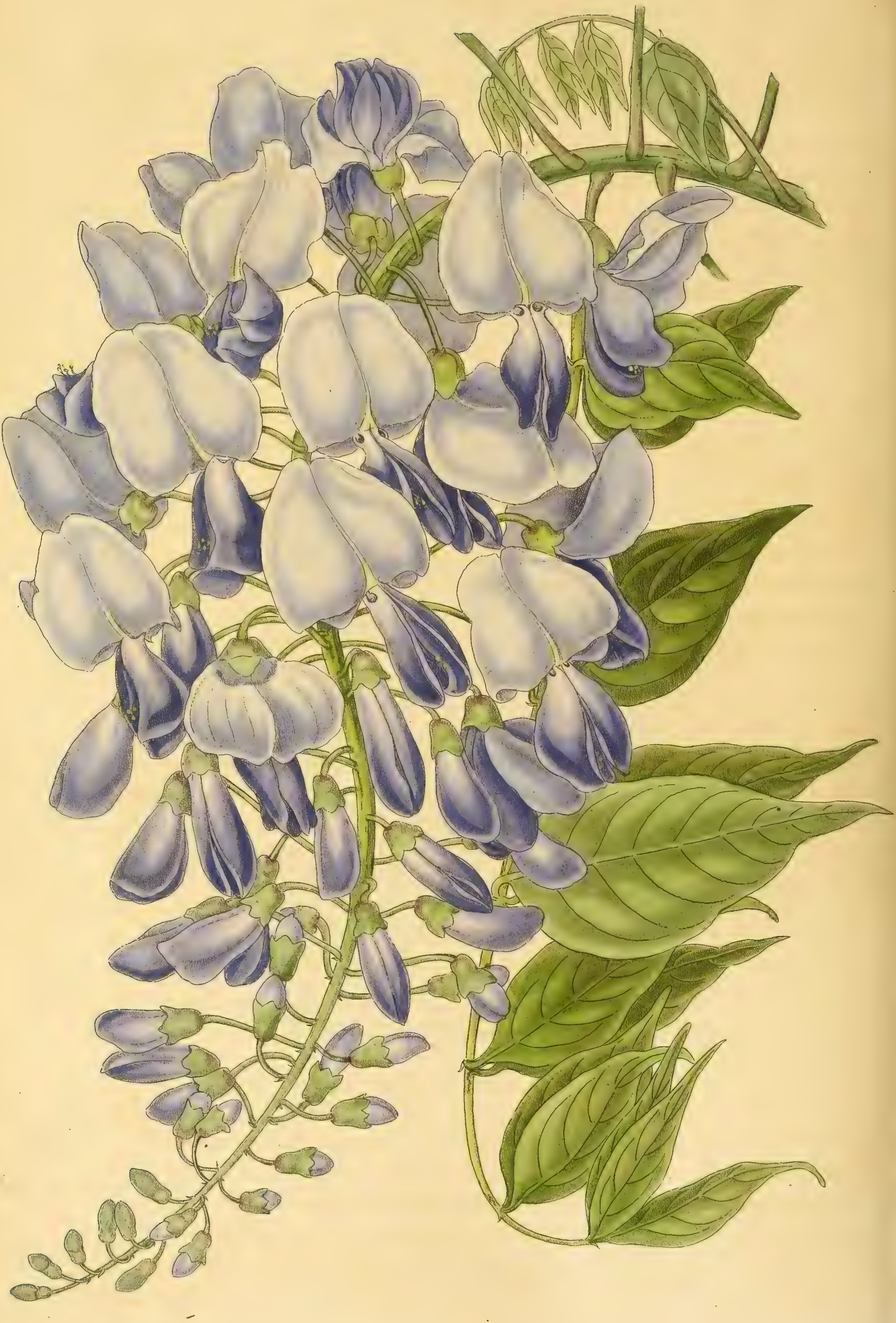
The taste for cultivating certain classes of plants, like every other popular propensity, would almost appear divisible into particular cycles, during which it increases or declines, attains its utmost universality or degenerates into complete listlessness, in a variously progressive order. Such, at least, has been the case with Heaths in the last few years. About the commencement of the last decade, or for a short term immediately succeeding the year 1832, they were exalted to a very high position in most collections. Since that time, a notion of their intractability to simple treatment, and their tendency to perish suddenly if at all disregarded, has become so current, that only a minority of noble growers kept up their collection with the necessary spirit, or possessed plants whose culture merited anything short of reprehension.

We have real pleasure in stating, however, that this feeling was not destined for continued existence, and that both gardeners and amateurs are now very generally relieved of so ignoble an impression. In the absence of any better criterion, we usually form our conclusions as to the degree of estimation in which any tribe of flowers is held, by the attention it receives in the different nurseries. These establishments almost invariably take their tone in accordance with public desires. Far from speaking this disrespectfully of any firm, we are confident that it ever must be so; and directly a commercial gentleman begins to devote attention to a group from which little or no profit can be reaped, he ceases, to a proportionate extent, to belong to his own caste, and ranks as an amateur.

But in the instance before us, besides the extraordinary regard which Heaths are receiving in almost every nursery we visit, private gardens and floricultural exhibitions offer a similar confirmation of our position, that a remarkable revival in their cultivation has recently occurred : and if one individual may be mentioned, whose example, and influence, and printed instructions, have contributed more than any other circumstances to create an attachment to this incomparable genus, and rendered its management comparatively facile, Mr. M'Nab, the Curator of the Edinburgh Botanic Garden, and author of an inestimable treatise on Heath culture, is undoubtedly entitled to that honour. By this gentleman, the present lovely variety was raised from seeds of *E. aristata*, the stigma of which was fecundated with pollen of *E. inflata fimbriata.* The hybrid is certainly fully equal to what might have been anticipated from two such admirable parents, and is quite fitted for bearing the name of its talented originator.

Messrs. Lucombe, Pince, and Co., nurserymen of Exeter, with whose extensive assortment of Heaths many of our readers are perhaps acquainted, in a letter obligingly sent us a few days since, say :—" Amongst all our Cape Heaths we have not a greater favourite than the present subject. It belongs to that description of Heaths which cultivators call ' hard-wooded,' and has a solidity and excellence of habit much to be admired. It flowers many times in the course of the year, but most abundantly in August." We have to thank the above gentlemen for the beautiful drawing of this plant here submitted, and for others which will hereafter appear.

For the treatment of Heaths, although we have repeatedly referred our subscribers to Mr. M'Nab's excellent pamphlet, we cannot too often recommend its perusal. Those curious to know the prevailing or most congenial system pursued in our metropolitan gardens, will find it described at p. 203 of the fifth volume of this work.



Wistaria Consequana.

WISTÀRIA CONSEQUÀNA.

(CONSEQUA'S WISTARIA.)

CLASS.	ORDER.
DIADELPHIA.	DECANDRIA.

NATURAL ORDER.

LEGUMINÒSÆ.

GENERIC CHARACTER.—*Calyx* campanulate, somewhat bilabiate; upper lip with two short teeth, lower one with three subulate teeth. *Corolla* papilionaceous. *Vexillum* bicallose. *Wings* conforming to the keel, which is two-edged. *Stamens* diadelphous. *Nectariferous tube* girding the stipe of the ovary. *Legume* standing on a short stipe, coriaceous, two-valved, one-celled, rather torulose at the seeds.—*Don's Gard. and Botany.*

SPECIFIC CHARACTER.—*Plant* a climbing or trailing shrub. *Leaves* laxly and unequally pinnate, from nine inches to a foot in length; leaflets ovately-lanceolate, acuminate, with very short petioles, triflingly undulated, covered with sericeous down; stipules small, scale-like, villous. *Racemes* usually at the ends of the branches, drooping, many-flowered. *Buds* collected together in the form of a catkin, and enveloped in large hairy bracts, which fall off as the flowers expand. *Flowers* showy, bluish-violet. *Calyx* short, campanulate, somewhat tinged with purple, bilabiate; upper lip ovate, emarginately truncate; lower one trifid, pointed. *Vexillum* rounded, reflexed, cordate at the base. *Wings* and *keel* of the same shape, parallel, rather shorter than the standard, and of a deeper hue, obtuse. *Stamens* with a small secreting hollow below the insertion of the single filament. *Anthers* short, ovate. *Germen* pedicellate, linear, slightly compressed, villous, many-seeded.

SYNONYMES.—*Wistaria sinensis. Glycine sinensis.*

UNWILLING that the popularity and comparative commonness of this peculiarly handsome plant should prevent us from indelibly recording its beauty in our pages by a well-executed drawing, we have determined to disregard those dissuasives, and present our readers with the figure now annexed. It is not our ordinary practice to delineate those plants which may be witnessed in every nursery, and in most private gardens where opportunities exist of cultivating them with facility; but all will concede that the charming *Wistaria* deserves to form an exception to any such rule.

No plant within the limits of our knowledge is more universally esteemed, or has such sterling claims to our attention. It has been pronounced, by experienced individuals, to be completely hardy; it can be grown in almost any position, either on the rafters, roof, or back wall of a greenhouse; it may be trained to a wall or flat trellis in the open air, a circular trellis, or a pole. It may likewise be treated as a dwarf shrub, and, by constant pruning, brought to thrive without any foreign support; or, finally, its branches can be allowed to trail over rockwork and be intermixed with the stones composing it, so as to form independent roots. Beyond all these circumstances, the profusion in which it blossoms is well nigh without a parallel; a specimen in the gardens of the Horticultural Society having borne, as stated in the Botanical Register, no fewer than 675,000 flowers in the past spring, the petals of which, according to the same authority, would, if "placed end to end, have extended to a distance of more than *thirty-four miles.*" Under a certain course of treatment, this plant will also bloom two or three times in one year, and besides the flowers remaining open for a considerable period, there is, on account of the disposition of the lower ones in the raceme to delay expansion till after the others, a free succession of them for fully more than a month, and their delicious odour is very generally agreeable.

With such a multiplicity of pleasing characteristics, it is only wonderful that there should be a single garden of any description wherein it is wanting, and we trust it will soon be so abundantly increased that even the cottager may adorn his little plot or embower his humble residence with so delightful an object. Its cultivation requiring no particular skill or care, this can the more easily be accomplished; and if proprietors would allow their gardeners to lay down a few shoots annually for the purpose of distributing the young plants among their tenants, the aspect of the country might, during the flowering season, be materially improved.

The main items in its treatment are the provision of a light loamy earth, and judicious but very close pruning. The former of these may readily be dispensed with, and any common soil will be found to suit it; but pruning cannot be neglected without great prejudice to the plant, since the production of flowers is altogether regulated by this practice. It should be performed in the winter season, and the young shoots vigorously cut back each year. By this means the elder branches will be induced to extrude flowering spurs, from which alone can blossoms be expected. Plants trained to poles, or preserved in a dwarf state, will necessarily need more pruning than those attached to a wall, and a greater display of bloom will invariably be the consequence. Specimens growing against a southerly elevation are often benefited by a covering of canvass in the early spring months, because, owing to the period at which their flowers begin to develop, they are liable to be injured by night frosts.

Some observations on the culture of this plant, with a view to the repeated production of blossoms in the same year, are given in the fifth volume of our Magazine. It may be propagated freely by layering the younger branches.

The genus is named in honour of Caspar Wistar, late professor of anatomy in the University of Pennsylvania.

HORTICULTURE AS A SCIENCE.

WHILE we admit the admirable skill displayed by practical gardeners, and view the beauties that are daily brought to light by their assiduous care, we are anxious to confer dignity on the art, and to assign it a rank among the sciences.

We know that many will object to the term: they will contend that all the operations of floriculture, digging, hoeing, raking, mixing, sifting, and potting, are simply those of routine, requiring precision and accuracy, but nothing further. We will not contest the point with these worthy, but mistaken men. It will suffice by slow degrees to open their eyes to the truth, by the adduction of facts which shall incontestably prove that gardening is a science of the highest order, since it embraces a knowledge of the great natural agents—light, electricity or etherial fire, water, atmospheric air and its gases, and the earths.

Botany, vegetable physiology, and chemistry, are available to, and connected with it. Of the two former, we shall have much to say hereafter, in a course of articles, one of which we propose occasionally to introduce; but it is our immediate object to inquire, whether *Chemistry*, in the ordinary acceptation of the term, is of any actual utility to the gardener, or appropriate to his art.

In the late papers upon "The Analysis of Soils," which commenced at page 9 of the present volume, we availed ourselves of the very able Prize Essay of the Rev. Mr. Rham, that appeared in the first number of the Journal of the now "Royal Society of Agriculture," in order to divest the process of some of its most perplexing difficulties. The operations therein detailed are almost purely mechanical, yet are they sufficient to confer on the patient observer much information on the nature of the loam he employs, and to exhibit the quantity and texture of the sand which it contains. If the precepts and rules inculcated in the abstract our papers contain be rigidly observed, that utter confusion which heretofore has prevailed will be removed; and writers in the public periodicals, or others who now freely inter-communicate through the medium of the post, will be at no loss to define the composition of that important article, loam, for they will have nothing more to do than to carefully dry, wash, separate, and weigh certain portions of the loam, and to note down the several products.

But while we admit to the fullest extent the value of the simple process thus accurately detailed, it must not be concealed, (and Mr. Rham himself proves the truth of the remark,) that an earth cannot be really analysed, and its constituents determined, without an appeal to chemical tests and re-agents. So far, then, we have proof irrefragable, that chemistry, as a science, is indispensable to horticulture; and in admitting this, we also show that, if horticulture requires a knowledge of chemistry to enable it to ascertain the nature of a soil, it becomes itself a science when it effects discoveries by appeal to scientific agencies.

The question therefore to be examined is this,—Does pure analytic chemistry apply to the processes of horticulture, or does it not? We answer, that we believe it does, provided a due discrimination be made between organized beings endowed with the vital principle, and effete decomposing substances, such as earths, stones, manures, and dead vegetable matter.

The investigation therefore of soils, of manures, animal and vegetable, of the ashes produced by fire, of water, of atmospheric air, and other airs or gases, of gums, resins, oils, and salts, becomes the subject of legitimate chemical inquiry; but if chemistry be applied to the investigation of organized living bodies, its powers are misdirected, and erroneous conclusions must be the inevitable result.

On a future occasion, it is proposed to offer a few preliminary remarks elucidatory of the various chemical terms in ordinary use; this will pave the way to the attainment of first or leading principles, and render the amateur and professional gardener acquainted with the meaning of words which he must continually meet with, and frequently employ. Some years ago, a series of chemical papers appeared in the pages of the Horticultural Register, which will, to a certain extent, obviate the necessity of entering upon the detail of analysis; still it will be desirable to collect together the various articles that form what are termed "tests and re-agents," all of which can now be purchased at a very trifling expense, and by these a gardener may at once ascertain what chemical salt or product exists in the juices of many plants. Thus, in the tasteless sap of the vine, he will in a moment be able to prove and exhibit the presence of a very small portion of *lime;* a circumstance which could scarcely be anticipated by ordinary observers, who still must feel astonishment in reflecting upon the conversion of a fluid so utterly void of flavour, into, first, the austere sour juice of the green unripe grape; and, finally, into the rich nectar of the mature fruit.

Yes, Chemistry has its uses,—we mean the Chemistry of the laboratory; for by it a great variety of the components of matter can be critically examined, and minutely detailed. But when we come to view the operations of the vital principle—to consider the agency of light, heat, and electricity, the production of the proper juice or cambium, and the distribution of the specific products of individual vegetables, we must speak with the extreme modesty which the intricate delicacy of the subject demands, and be very careful how we refer them to pure chemistry.

The late Sir J. E. Smith observed, "We must constantly remember that it" (an organized plant) "is not merely a collection of tubes and vessels, holding different kinds of fluids, but that it is endowed with life, and consequently able not only to imbibe particular fluids, but to alter their nature according to certain laws; that is, to form peculiar secretions; this *is the exclusive property of a living being.*" ——The most different and discordant fluids, separated only by the finest film or membrane, are kept perfectly distinct while life remains; but no sooner does the vital principle depart, than secretion, as well as the due separation of what has been secreted, are both at an end, and the principle of dissolution reigns absolute."

At this point, but not before, chemical agency commences, and effects the total decomposition of the products.

THE RADIATION AND CONDUCTION OF HEAT.

No meteorological phenomena are so pregnant with interest, or of such pre-eminent import, to the gardener, as the transit of heat from one substance to another, and from terrestrial bodies to the atmosphere. And yet, speaking generally, there is scarcely a cultivator who could clearly explain their nature, or definitively state how they are accomplished. Many most ridiculous notions concerning them are rife in the world of horticulture, a few of which have even been supposed to receive confirmation from professedly scientific sources; so that it is incumbent on some one to place the subject in so simple a light that no further mistakes may be justifiable. This task we propose now to attempt.

Philosophers have long since determined that changes of temperature, in common with all other procedures of Nature, are regulated by certain unvarying laws. Of these, one of the most prominent is the transition of heat from a warm body to any cold one that may be contiguous, till the temperature is equalized. Now, although air is too seldom regarded as a refined and subtile substance, such is its unquestionable nature. Hence, the process termed radiation is, in point of fact, though to a limited extent, a kind of *conduction;* the small particles of matter of which the atmosphere is composed being the media through which, when brought into contact with objects on the earth's surface, their heat is abstracted.

The above position does not, however, wholly hold good; since heat is said to be capable of pervading a vacuum, and matter cannot consequently be a necessary auxiliary to its dispersion. For all practical purposes, therefore, and likewise to facilitate the inculcation of the precepts of science, a very proper distinction is made between radiation and conduction. Both are the result of expansion,—one of the most striking properties of heat; but the former is the means through which the temperature of a body is lowered by diffusing itself into a colder *air*, while the latter term is applied to the passage of heat from a warm *solid* substance to a cold one, when placed in immediate contact therewith.

Radiation, as the very word implies, is the divergence of a number of heated atoms, in the form of rays, from a body thoroughly warmed; or, as some assert, it is the mere emission of calorific rays, causing a greater or less undulation in the constituents of the atmosphere, whereby an increase of temperature is occasioned. Thus, the sun radiates heat perpetually, some of its rays being transmitted through our air to the earth, by which they are received, and from which, during the absence of that brilliant luminary, they again emanate in a similar manner. It is very frequently confounded with refraction, which is quite another process, and most markedly different; radiation being the simple issue of heat from any surface, and refraction the interception of its rays by an interposed screen, and their re-radiation from thence towards the point from whence they originally proceeded. For example, the earth *refracts* many of the rays that reach it from the sun, and it is chiefly from this cause that the geniality of our atmosphere arises. But it also *imbibes* other rays; and the *radiation* of these serves to prevent a coldness during the night that would be wholly destructive to both animal and vegetable life.

Having thus laid the basis of the application of artificial coverings to plants on the principles of science, the following hints on protection will not be misapprehended. Plants being formed of earthy and atmospheric elements, combined and concentrated according to their peculiar powers, have, in proportion to their porosity, and with a slight reduction on account of their vital energy, the same tendency to radiation as soil. Unless, then, this be duly interrupted, the more susceptible kinds must be subjected to irremediable injury; whereas, if radiation can be effectually suspended, they will be perfectly safe in the most severe weather. We would most willingly print this last declaration in capitals, if we thought it could escape the culturist's notice; so mightily influential do we deem its purport.

It follows from these premises, as we have often before endeavoured to show, that the old method of supplying fire heat to plant-houses, where the sole design is to exclude frost, is radically wrong; indeed, it is a positive and total waste, expended, too, on an object that cannot sometimes be realized by such a practice, and the failure of which is more or less likely to be fatal to the plants. If it be demanded what we would substitute for it, we would suggest—*prevent the escape or radiation of heat*, and there will be no need to essay the supply of a deficiency that does not exist.

If these hints on radiation have received half the attention which their subject demands, the reader will be ready patiently to pursue the investigation as it concerns conduction. We have distinguished the two processes by showing that the first phrase characterizes the transmission of heat to the superincumbent air, while the topic now to be discussed embraces the deprivation of temperature which a body suffers on being touched by a colder one. On the extent to which the latter circumstance is obviated, the merits of any system of covering plants, whether in houses, frames, or the open ground, must, to a very great degree, be wholly dependent.

It is notorious to every inquiring person, that heat is much more speedily dissipated when the substance containing it is in direct connexion with some less highly heated material. But the more humble members of our profession find it difficult to comprehend or believe this fact. Let us, then, adduce an easy illustration. If a bar of cold iron, which, perhaps, is one of the most rapid conductors of heat, be placed within an inch of any individual's hand, the diminution of caloric which its vicinity occasions is scarcely perceptible; but if the same substance be grasped or laid on the hand, the abstraction of heat is so sensibly felt, that, without a strong effort of volition, the iron would immediately be dropped. Again, the atmosphere of an apartment may be exceedingly comfortable as regards temperature, and altogether consonant with the appetencies of a sensitive person, while, by pressing the hand against glass of which the outer side is exposed to a severe external air, considerable pain will be experienced from the loss of caloric consequent on such an act.

We have chosen these commonplace examples the more completely to demonstrate our position ; although the experience of the cultivator of extensive practice might at once decide the point. There is the most apposite analogy, in respect to heat between an individual in a confined room, and a plant in a sort of tent-like or any other protective frame. Both may be kept from perishing by frost if situated in the middle of the area, but both must undergo the loss of those parts which are in contact with a thin covering closely communicating with the outer air, if frost be sufficiently severe. Proofs of this have often been furnished in the case of plants whose shoots touched the glass or mats by which they were surrounded.

Herein, therefore, lies the art of protecting plants. They must, first, be enveloped in a material which is known to be an imperfect radiator of heat, so that their own temperature may, for the most part, be retained within or around them. And secondly, that material should be so disposed, that no part of it be nearer than about two or three inches to the exterior shoots. The importance of confining and tying in the outer branches of shrubs that are wished to be covered, will thus be plainly discernible.

Plant-houses and frames have yet to be treated of. It is generally imagined that no resemblance is traceable between the operation of sheltering these, and that of protecting isolated plants, because specimens in the former are already guarded by a sheltering surface. The principle, however, remains unaltered and unalterable, whatever may be the conditions in which the plants exist ; and is as applicable in the one instance as in the other. Glass, it is well known, radiates heat with astonishing rapidity, and the temperature which a glazed surface derives from the house or frame beneath it is so great, that were the additional covering made use of allowed to lie flatly upon it, heat would be conducted from the entire apartment with very little less celerity than if the glass were exposed, or this last removed, and mats substituted for it ; the only difference of result from the cases before mentioned being, that the *whole plant* would be rather more slowly robbed of its caloric, instead of at once merely having a single member frozen.

Common garden mats are exceedingly well adapted for placing over the roofs of frames or houses, but they should never be so thrown on as to touch the glass. To avoid this, one or two small strips of wood can be fastened across the middle, as well as to the top and bottom of the frame ; and if the mats are drawn tightly over these, and secured by strings, observing to have the former long enough to prevent any apertures being left, they will answer every desirable purpose infinitely better than they could if not sustained at a trifling elevation above the roof. Where Harrison's mode of glazing is adopted, the peculiarity of which is to dispense with wooden bars raised higher than the level of the glass, and thus present a perfectly flat surface ; such a precaution is especially indispensable.

In a recent paper on Pelargoniums (p. 88), we have noticed a kind of protection employed by Messrs. Henderson, Pine-Apple Place, which we may here again commend to the consideration of all who study neatness, efficiency, and economy. For those sorts of plants which only need shelter in frosty weather, frames of such a description will entirely supersede the use of glazed lights, and they can be very easily manufactured ; but they are quite as suitable for covering a glass roof, from which they will effectually prevent excessive radiation. We hope it has here been plainly proved *why* an elevated covering is to be preferred, for there is nothing which we so much wish to avoid as dogmatical assertion, or which we so much desiderate, even on the most scientific subjects, as succinctness. Conduction being but a continuation of the radiating process, where it is allowed full operation, the disparity between the escape of heat from a covered and uncovered glazed surface, when the materials are in contact with it, is only one of time, and not of extent.

LOUDON'S ARBORETUM ET FRUTICETUM BRITANNICUM.

A SLIGHT notice of this invaluable work having appeared in our last volume, renewed advertence to it may seem supererogatory. At that time, however, we were imbued with the persuasion that every proprietor of landed property, or of the smallest ornamental estate, would, without exhortation from us, eagerly possess themselves of so essential a guide to all the practices of arboriculture. Having since ascertained that our expectations on this head were illusive, we are anxious farther to press it on the attention of our readers, satisfied that, if we should induce them to purchase, they will ultimately be led to acknowledge themselves highly benefited by the suggestion.

We decidedly consider this our author's *chef-d'œuvre*, as it leaves scarcely anything of vital moment yet to be desired on the important subject of which it treats. There is not a hardy tree or a shrub grown in British gardens but is here faithfully described, with the synonymes and remarks of all botanical writers, an account of its introduction, history, uses, culture, propagation, and the prices for which it may be obtained in different countries. A great mass of this information is from the extensive and varied resources which have been opened up to the author in the course of his laborious career ; but every work that bears reference to the objects under consideration, has been culled with the greatest judgment, for the purpose of collecting into one group all the observations and experience of individuals of every era since arboriculture was first regarded as an art.

For persons of an imaginative turn of mind, and such as love to gather and cherish pleasing or even fanciful associations in viewing the productions of Nature, ample materials are afforded throughout this work. The most sublime and interesting allusions to trees in Sacred Writ, the choicest passages from the pages of our own and other poets, and numerous citations from polite literature, when having any connexion with the plants under discussion in the places where they are introduced, are not sparingly scattered over these pages. Considering the tendency of such selections to render their subjects doubly delightful, and to attach to objects which are ever before our eyes agreeable or elevating sentiments, by metaphorically making them the mementos of impressions primarily conveyed through their imagery, we think our author has acted judiciously in their admission; though it must be confessed, that, as they heighten the cost, they place the work farther beyond the means of the gardener. Few gardeners, indeed, can be supposed capable of procuring it. But we recommend every gentleman who desiderates economy and beauty, either to present his gardener with a copy, or to obtain it for himself, and allow an occasional perusal.

In scanning the letter-press portion of this work, we are struck with the author's amazing assiduity in amassing facts relative to the points discussed. Exact and comprehensive data are happily, in the present philosophical age, the only recognised means of arriving at a determinate knowledge of things. The disposition of the human mind to rush to general conclusions from imperfect premises, or from merely isolated instances, is so fatal to the establishment of correct principles, that it cannot be too earnestly deprecated, or too warily avoided. Mr. Loudon has, therefore, wisely brought together a large body of instructive cases illustrative of the hardihood or other peculiarities of certain plants, and generally left his readers to apply the beautiful inductive process of Lord Bacon in attaining accurate inferences. Under the head of Statistics, there is likewise a fund of interesting memorials concerning the age and size of individual trees now existing in the collections of this country, by which the admirers of particular species may ascertain where they can be seen in the greatest perfection. We would warmly invite attention to this circumstance; because, as the majority of estates whose contents are here registered are easily accessible, cultivators can rectify the erroneous idea of the habit and appearance of a tree frequently formed from witnessing only a young specimen, obtain a more favourable view of plants they have before treated slightingly, and learn what are the conditions beneath which they attain their highest beauty.

Another point which demands our notice, is the tact exhibited in the condensation of those boundless supplies of matter with which the author must have been furnished, into a compass just equivalent to their relative utility. We now refer principally to the descriptions of species, the practical directions for culture, and the statistical details. Twice the number of volumes might have been filled by an inexperienced individual, without entailing any additional advantage. Hence, by the excellence of the arrangement, the printing of everything of minor moment in a small type, and the avoidance of useless conjecture or superfluous ratiocination, the reader receives double the amount of positive information which a younger hand would have compressed into the same space.

But while this author does not obtrude on us a number of silly suggestions which are never likely to be realized, we are happy to observe that he cannot be ranked with those who virtually attempt to suppress advancement in any science by ridiculing every hypothesis, however plausible from analogy or partial experiment, if not absolutely established. On the contrary, these volumes abound in novel hints of the most satisfactory nature; and the only obstacle to their success seems to us to be the reluctance of many to attempt their proper effectuation. Of these hints we may hereafter give a few examples. The topic of this kind on which we wish especially to dwell, is the strong countenance throughout afforded to the theory of acclimatation. That hundreds, indeed thousands of exotic plants have been thoroughly acclimatized in this country, the examination of our catalogues of indigenous species, and a simultaneous tour through our gardens and woods, will speedily demonstrate. Besides, those conversant with the introduction and subsequent history of many Chinese, Japanese, North Indian, and other plants, well know that, making allowances for their injudicious treatment with regard to temperature at the period of their importation, they have gained at least some degree of hardihood by exposure to our less genial and very variable atmosphere.

There can be no doubt that the benevolent Author of being has placed every living object in the climate most suitable to its natural wants. Nevertheless, it is quite as certain that the peculiar constitutions of vegetable bodies are capable of being extensively modified by a long continuance in certain circumstances, to which, if not *gradually* accustomed, they would never conform themselves. Life, wherever it exists, always evinces a remarkable tenacity of continuance; and thus we see plants of a strong organization, struggling so effectually amidst slightly inimical conditions, through the energy of the vital principle, as ultimately to become perfectly habituated to them, and to bear their occurrence without injury. It may be that the ordinary duration of such specimens is thereby a little shortened; but if the end for which they were destined—that of flourishing in the open ground for a lengthened period—is duly fulfilled, the gratification of the cultivator is a necessary consequence, and their offspring are better able to fill the places vacated by their decay, than any specimens taken from a more congenial position.

This leads us to the remark that seeds ripened or germinated in heat will never produce such hardy plants as those matured and vegetated in the open air. And the position will be at once obvious on a close observation of the actual state of plants so raised. Seeds which reach maturity in a high temperature, must have their infant organization of that increased induration of texture and tenuity of cellular structure, which heat invariably engenders. Such a rudimentary state demands proportionate stimuli for elaboration. So that, when development is excited in a lower temperature, it will be sluggish, imperfect, and too refined and delicate to advance healthily under the obstructions which cold presents; in other words, it will be far more susceptible of damage. If heat be further employed, all these conditions will be sensibly aggravated.

To advert to specimens germinated from hardy seeds in an artificial temperature, their stems and branches are essentially precocious and debilitated; their pores open, their vessels attenuated, their juices unusually limpid; they cannot acquire, in proportion to their progress, that solidity, thickness, and hardness of structure, which would result from a more tardy enlargement, and thus, when afterwards transferred to the open air, they are found to be particularly tender, to part with their heat much sooner than the robust plants which have all along been treated as hardy species, and to experience the necessary results—coagulation of the vital currents, and immediate decomposition.

We have above stated the theoretical grounds for an opinion which intimately concerns the culture of exotic trees and shrubs, and is, on that account, really relevant to our present review. Let us add that it has been abundantly corroborated in practice, and that proofs of its accuracy are constantly transpiring. Any person may easily convince himself of this by sowing, in the months of May or June, the seeds of a Californian or other annual that is usually considered half-hardy in an open flower-pot; and, at the same time, sowing an equal quantity of similar seeds in a stove. If the plants from the former semination are allowed to ripen their seeds and scatter them spontaneously, the ground being simply stirred after they have fallen in order to bury them in the soil, the seeds will produce other plants during the autumn, which, provided the winter season is tolerably mild, will not sustain the slightest detriment. Again, let the specimens in the stove mature their seeds, and let these be committed to a bed adjoining that containing those which are self-sown, and the decline of the year will rapidly decide which are the hardiest.

At the end of every enumeration of the hardy ligneous plants in each Natural Order, Mr. Loudon gives a list of those greenhouse species which he deems likely to endure our winters. We attach great value to this; for the culturist who is eager for naturalising foreign species, will here meet with much assistance in choosing the most appropriate for experiment, since many of those recorded have been known to stand unhurt in sheltered situations. One or two extracts of this class will now be made; although we should first state that all our quotations will be from passages most conformable to the object of our Magazine, and not so much with the design of displaying the general character of the work. Of *Tacsonia pinnatistipula*, it is said :—

"The plant, which is exceedingly beautiful, has flowered magnificently, and ripened its round yellow fruit, in the conservatory of Mrs. Marryat, at Wimbledon; and *it has flowered on the open wall* of the garden at Englefield House near Reading. There are several other species of this genus which have not yet been introduced. Hybrids will, no doubt, be raised between this genus and *Passiflora*, and perhaps something might be gained in hardiness by grafting *T. pinnatistipula* on *Passiflora cœrulea*."

Again, in reference to *Escalonnia montevidensis*, a dwarf, free-flowering, and beautiful shrub :—

"It is a native of Brazil, on sandy banks and pastures, and was introduced in 1827. It forms a remarkably vigorous-growing bush, with long, flexible, rope-like shoots, and is very prolific in flowers. It is *so hardy as to have stood through* *several winters, as a bush*, in the open ground of the Kensington nursery; so that we might almost have been justified in placing it among the hardy shrubs."

Opuntia vulgaris, which is commonly kept in the stove, "is a native of North America, in the southern states, and is found abundantly in gardens in the neighbourhood of New York. It is also very common in Italy, and various parts in the south of Europe. In Virginia it is valued for its refreshing fruit, and it has been cultivated for the same purpose on dry rockwork, in the neighbourhood of London. It will live many years, with little or no protection, at the bottom of a dry warm wall; and, though usually prostrate, yet, if the shoots are nailed to the wall, it will grow to the height of several feet. It deserves a place in a collection of half-hardy, ligneous, succulent, plants, for the sake of its singular appearance; and various other genera and species belonging to the same order are, probably, nearly as hardy."

So, also, the species of *Mesembryanthemum* are very easily cultivated in the open border:—

"Most of them are natives of dry sandy soils at the Cape of Good Hope, and in other parts of Africa; and many of them will live through the winter on rockwork in the neighbourhood of London, if protected with dry litter. When they can be preserved through the winter, they make a splendid appearance in the summer, with their brilliant flowers of scarlet, yellow, purple, or white. Several species have stood through the winter, without any protection, on the rockwork of the Chelsea Botanic Garden; and a number of sorts were, till lately, preserved in a cold pit in the garden of the Horticultural Society."

We might multiply quotations of this and other descriptions to an almost endless extent, and descant, moreover, on the admirable plans for an Ericacetum; the excellent woodcut illustrations of the effects of weeping willows, poplars, &c. on scenery; the usefulness of the figures—exactly the natural size—of leaves belonging to all the species of every large genus; and the other woodcuts—amounting to more than 2500—of the most interesting species in the remaining genera; together with the four volumes of plates of entire trees, the valuable introductory matter, and the figures and descriptive notices of destructive insects; but we hope we have already said enough to impel all who admire and study trees, or cultivate them in any way or for any purpose, to add the *Arboretum et Fruticetum Britannicum* to their library, as comprising in itself a complete cyclopædia of Arboriculture. Highly as we have spoken of the masterly manner in which it has been prepared, we have not done so unguardedly. It is both an entertaining and a profitable work. Many parts of it are well adapted for general reading, while it must ever be esteemed as a standard of reference. In short, it may be said of this book, what few others are entitled to, that no desideratum within the author's reach is left unsupplied; and, considering its latitudinarian scope, not a single page could well be omitted.

FLORICULTURAL NOTICES.

NEW AND RARE PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR JUNE.

Aganísia pulchèlla. Of this pretty new orchidaceous plant, which was imported by Messrs. Loddiges from Demerara, and has bloomed solely in their collection, Dr. Lindley observes, that "if its column were produced into a foot, and the lower sepals unequal at the base, it would be a *Maxillaria*; but as there is no trace of that character, which is essential to *Maxillaria*, the genus seems sufficiently distinct." The rhizoma of the species is long and creeping, though slightly ascending at the extremity. Dry brown scales envelop both it and the pseudo-bulbs, which latter are extremely small and tapering, being, moreover, several inches distant from each other, and bearing a solitary, oblong, five-ribbed leaf, on their summits. The racemes of flowers appear to spring from the bottom of the young pseudo-bulbs, growing erectly, and producing from three to six beautiful white blossoms, with an entire lip, which is chiefly of a yellow colour, but has a spot of purple at the base. It may be affixed to a log of wood, and suspended in the orchidaceous-house. *Bot. Reg.* 32.

Epidéndrum vitellìnum. From the resemblance in the hue of its flowers to that of the yolk of an egg, this showy species has received its name. It has been known in the herbarium of botanists for many years, but plants collected for George Barker, Esq., of Birmingham, blossomed in the garden of that gentleman in September, 1839. From dried specimens recently procured by Mr. Hartweg, on the Cumbre of Telontepeque, in Mexico, at an elevation of 9000 feet above the sea, Dr. Lindley is led to form a much higher opinion of it than previously, since one of them "has a spike covered with fifteen large orange-coloured flowers, all expanded at once, over a space of more than six inches in length, and forming a most conspicuous object." It would appear that only lately have we succeeded in obtaining the richer-coloured *Epidendra*, as our collections could now exhibit a group of them comprising several species, whereas, two or three years back, living plants were unknown. The present subject is a pseudo-bulbous species, the bulbs being covered with large greenish scales, and surrounded by two oblong leaves. The flower-stem is erect, and issues from between the latter. A low temperature is recommended as an important feature in its treatment. *Bot. Reg.* 35.

Morìna longifòlia. A handsome herbaceous plant, which is now, we believe, the only representative of a genus once inhabiting our gardens. It was discovered by Dr. Wallich on the mountains of the North of India. "Gossain Than is the district more particularly mentioned as the native country of the plant, of which seeds were given by Professor De Candolle to the Horticultural Society, in whose garden it flowered in November last." Its average height is about two or three feet; it is of perennial duration, and flourishes best in a dry position, with culture similar to that bestowed on *Acanthus mollis*. To the plant just named it has some resemblance in character, having prickly and peculiarly jagged foliage, with large whorls of flowers. The last are, however, of a pinkish red tint, and have very much of the form of a *Verbena*. It is propagated readily by seeds, blossoms from July till the decline of autumn, and requires the protection of a hand-glass in winter, on account of its inability to endure much wet. *Bot. Reg.* 36.

Myánthus spinòsus. What principally isolates this new *Myanthus* is the spreading, linear, grooved lip, which is saccate near the middle, and has its "margins beautifully fringed with white, flexuose, succulent hairs, greenish-white beneath, dotted with red, bearing on the upper side, at the base, an erect, three-parted spine or horn, and having a much larger porrected one below the acumen, which is a little toothed and fimbriated." In colour, the flowers assimilate to those of *M. barbatus*, but they are more densely disposed, and on a stronger erect spike. The pseudo-bulbs are not remarkable, and the leaves have not yet been seen. It was found by Mr. Gardner in the province Ceará, in the interior of Brazil; and having been sent from thence to the Glasgow Botanic Garden, bloomed in February of the present year. *Bot. Mag.* 3802.

Oncídium Huntiànum. There seems to us a striking similitude between this plant and the *O. roseum* of Messrs. Loddiges' collection; although, if the drawing before us be faithfully coloured, the spots of its flowers are pure red instead of pink, there is a larger blotch of red at the base of the lip, and an undefined stain of yellow in the centre of the flower. It is a Brazilian species, after the habit of *O. Carthaginense*, but with much smaller and more gaudily-coloured blossoms. Specimens sent to Woburn Abbey, by — Hunt, Esq., of Rio Janeiro, flowered in October, 1839, and it has been named in compliment to the above gentleman. *Bot. Mag.* 3806.

Portulàca Thellusònii. We have had opportunities of witnessing and admiring this singularly splendid plant, and fully concur in Dr. Lindley's assertion that art is incapable of doing it justice, notwithstanding the very showy plate in the Botanical Register. "It was sent from Florence to the Horticultural Society, by the Hon. Frederick Thelluson, now Lord Rendlesham," and has been thought worthy, on account of its apparent distinctness from the other species, of bearing that gentleman's name. Like other tender annuals, its seeds should be sown on a gentle hotbed in spring, and the young plants flower better if kept in pots, in the compost usually prepared for *Mesembryanthema*, and freely exposed to the sun. In the open border, the flowers are liable to injury from wind and rain; and "the best place for it is in a south window, or on the south side of a greenhouse, or at the foot of a hot south wall in a sequestered nook, especially if among a few blocks of limestone rock." It grows sometimes to a foot in height, and blooms nearly all the summer. The hue of the flowers is almost indescribable, being between a deep rich red and a fine blood colour, but with a yellow centre. *Bot. Reg.* 31.

SPREKÈLIA CYBÍSTER, *var.* BRÈVIS. The plant noticed in our April number under the title of *Hippeastrum anomalum*, has since obtained the above designation from the Hon. and Rev. W. Herbert. It is chiefly distinguished from *Hippeastrum* by " the convolution of the lower sepals, of which the base in our plant is in a very singular manner obliquely enlarged, so as to inclose the filaments." *S. cybister*, to which the present variety is so closely allied, has been called the Tumbler, " from the very singular precipitation of the buds in their progress towards expansion, and the final perpendicular posture of the lower lip of the flower." This variety was introduced from Bolivia by Mr. Knight, of the King's Road, Chelsea, with whom it blossomed in April last. *Bot. Reg.* 33.

STENOMÉSSON LATIFÒLIUM. A rather interesting bulbous plant, with clusters of upright pale orange flowers on an erect scape. " It was sent to Spofforth (the Residence of the Hon. and Rev. W. Herbert) by J. Maclean, Esq., from Lima, in November, 1837, and having arrived in the spring of 1838, showed its leaves soon after, and flowered very early in the spring of 1839, and again in 1840, or rather towards the close of the winter, during its season of rest." It prefers a rich light soil, with a slight protection from scorching sunshine, and must be kept perfectly dry in the winter. *Bot. Mag.* 3803.

TRADESCÁNTIA IRIDÈSCENS. The remarkable dwarfness, abundant foliage, and large attractive blue flowers of this exceedingly neat perennial, render it a most desirable plant in a greenhouse that has small shelves or stages in a conspicuous situation. It is said to be half-hardy, with tuberous roots, " growing in any rich soil, and flowering in July and August, each flower only lasting for a few hours." An increase may be effected from seeds, the plants raised from which flower in the second season, their roots being preserved through the winter by retaining them in the pots, in dry soil, or placing them in sand. It is a native of Mexico, and although its flowers are very ephemeral, there is a long succession of them, and their iridescent appearance renders them extremely pretty." Plants of it bloomed in the garden of Sir Charles Lemon, Bart., at Carclew, in Cornwall. *Bot. Reg.* 34.

NEW, RARE, OR INTERESTING PLANTS IN FLOWER IN THE PRINCIPAL SUBURBAN NURSERIES.

AÉRIDES AFFÌNE. All who love Orchidaceæ, have usually a particular affection for the lovely *A. odorata*, and those charming species of *Saccolabium* which flower so profusely in the spring season. The present extremely beautiful plant, which has been imported from India by Messrs. Loddiges, and is now flowering very finely in their Orchidaceous-house, is exceedingly like *S. guttatum*, the floral raceme depending from the stem, and bearing a great number of delicate flesh-coloured blossoms, copiously blotched with deep pink. Botanically, however, they are quite distinct; and they may likewise be popularly distinguished with the greatest facility by the less prominent spots in the flowers of *A. affine*, and the circumstance of the raceme being branched. It is a most admirable plant, and highly calculated to arrest attention.

AGANÍSIA PULCHÉLLA. As a notice of this pretty new Orchidaceous plant is given in a previous page of the present Number, we shall only further state that it has just bloomed at Messrs. Loddiges', and is worthy of every encomium.

BATÀTAS BONARIÉNSIS. A handsome climbing plant, allied to the genus *Ipomœa*, and only slightly separated therefrom. It grows luxuriantly, has large palmate foliage, and pale but very elegant blush-coloured flowers, with a purplish centre. Specimens are now flowering in the stove of Messrs. Rollison, Tooting; but it may, we understand, be cultivated readily in a greenhouse. It forms an excellent plant for covering the roof of a house where shade is desired; while the abundance and beauty of its blossoms render it peculiarly ornamental.

BRACHYCÒME —? We last month mentioned a species of this genus (*B. iberidifolia*) as blossoming at Mr. Low's, Clapton; and the same specimen still continues to bloom in equal perfection. Another species, with much lighter flowers, has also recently expanded there, and almost rivals the preceding in interest and attractiveness. As a large quantity of buds have yet to be developed, it is probable that there will be a free succession of blossoms throughout the summer. In this case, both the plants will be of essential service to the flower-garden, since they appear peculiarly fitted for planting in groups.

CALLISTÀCHYS LONGIFÒLIA. Among the many seeds that have latterly been received from the Swan River Colony, those of a plant supposed to be a *Chorizema*, with remarkably long leaves, have been especially prized. This having now flowered with Messrs. Rollison, Tooting, and in other collections, proves to be a species of *Callistachys*. It is a robust-growing shrub, attaining the height of from four to five feet, with round, smooth, greenish stems, numerous branches, and neat, long, lanceolate, mucronate, reticulated foliage. The flowers are borne in stiff terminal spikes, the principal colour (that of the standard) being pale yellow, while the wings are reddish-purple and the keel pinkish white, tinged with purple. Although showy, it is too straggling for an ordinary greenhouse, and better adapted for a conservatory, or a large establishment.

DIPLOLÆNA DAMPIÈRII. When a plant has been the subject of high expectations, and for a considerable time, the disappointment occasioned by its proving nearly worthless is felt in twofold force. We confess, therefore, that because, from the interesting habit of the plant, and what we had heard respecting it, something splendid was anticipated, our surprise was proportionally excessive when we found its flowers so insignificant. These have lately opened at Mrs. Lawrence's, Ealing Park, and besides their being small, they are of a brownish-green hue, with a cluster of similar stamens protruding from the centre. It is only suitable for the curious cultivator, or botanical collections.

Epidéndrum papillósum. This is one of the pseudo-bulbous class of *Epidendra*, by no means singular in its general habitude, or the tints of its blossoms. The pseudo-bulbs are almost globular, and the leaves very narrow, with a channel down the middle. The pedicels of the flowers are covered with minute warty excrescences, as are likewise (though more sparingly and imperceptible) the outsides of the sepals. These last, together with the petals, are greenish brown, the labellum being yellow, with two large lateral ears, and three small purple stripes in the centre. The column is dark orange. Messrs. Rollison possess flowering plants.

Genísta monospérma. In the greenhouse of Messrs. Young, Epsom, we were much delighted, a few weeks ago, by witnessing a well-grown specimen of this most engaging plant, and inhaling its exquisite fragrance. The slender pensile branches were liberally bedecked with their dense bunches of pure white blossoms, and to those who have a taste for the really beautiful, it must be considered a particularly choice object. We are told that a large supply of honey is obtained from this plant at Teneriffe, of which it is a native.

OPERATIONS FOR JULY.

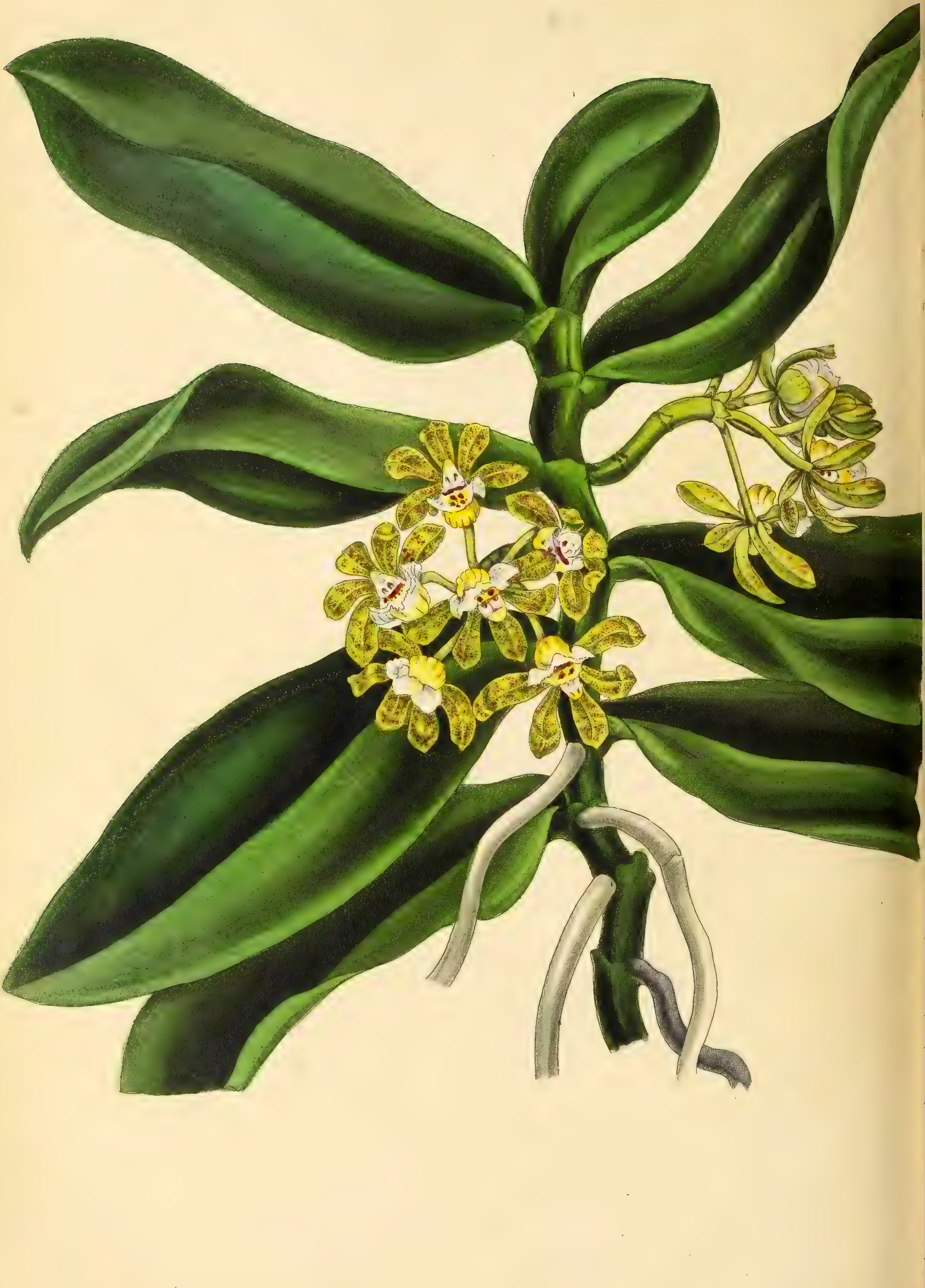
WHILE the cultivator of choice fruits and esculents is exulting in the perfectly propitious character of the present season, and the agriculturist is also profiting by its occurrence to secure the attainment of objects which cannot ordinarily be fulfilled, we would not have the amateur of flowers alone blind to his interests, or regardless of those processes for which there is so fine a prospect of success. In our fickle clime, an early, unblighted, and altogether brilliant spring, like that just concluded, is too rarely experienced to admit of its effects on vegetation being neglected. It affords unequalled opportunities for hybridizing all kinds of plants that bloom during this and the ensuing months; for collecting seeds from species that flower late, and have not generally sufficient time properly to mature their seminal organs; for thoroughly ripening the wood of exotic kinds; and for allowing to the ailing specimens of the latter class one or two months' liberty in the open ground, in order to renew their declining vigour.

We will cursorily touch upon the chief of these questions. The practice of hybridization is one which we would cheerfully aid in extending, as it displays some of the most interesting triumphs of human art, and is always instrumental in introducing a decidedly worthier race than that upon which the first experiments are tried. Illustrations need not here be adduced. We desire, however, to see it embracing a wider field than it has hitherto occupied, and including annual border plants. These fugitive ornaments of our flower-beds cannot, we think, be too diversified; and though they would not, probably, perpetuate their mixed features by seeds, every gardener now knows that a very desirable sort may be abundantly propagated by cuttings, and that the seeds of hybrids will continue to produce a still greater variety if they are liberally treated. The adoption of this hint may, therefore, be left to the culturist's wishes or discretion.

By transferring sickly greenhouse plants to a prepared border in a favourable spot during the months of June and July, incalculable good may be effected. But all this will be more than lost upon them if they are not restored to pots before cold weather commences, so as to check their propensity to grow too much beyond the natural term. They can be freely suffered to luxuriate for a short time; in fact, this is the principal design of their exposure: nevertheless, when they are discovered to be advancing at a more rapid rate than is consistent with their habits, or than comports with the due maturation of their shoots, prudence suggests that a speedy removal should be made. For specimens that are to be planted in the beds of conservatories, and which are consequently wished to form healthy and large plants as soon as possible, nothing can be more suitable than a summer's indulgence in an open spot, where they will acquire more vigorous and less diffuse habits than if retained beneath glass. Much care is of course necessary in their transplantation.

Annuals and other plants that happen to be sown in dry weather, and the seeds of which do not all vegetate at the same time, must not be supposed to have failed until copious showers of rain have fallen. We were witnesses, about two months back, to the unconscious destruction of a large quantity of beautiful plants, some of the seeds having sprouted nearly a month sooner than others; and this having led the cultivator to surmise they were imperfect, he hoed the ground containing them, and thus effectually prevented them from growing. On a small portion that was left unstirred, the remaining seeds, after frequent heavy rains, all produced plants, which have since thriven most exuberantly. Many seeds are much more hardened than others in the process of ripening, and many are likewise kept for several years and then mingled with more recent ones, both of which causes will occasion a wonderful difference in the period of their development.

July being indisputably the hottest month in the year, on account of the greater degree of heat in the earth and terrestrial substances, it is clear that this provision of Nature is intended to answer some useful end in vegetable economy, and that end is accordingly apparent to physiologists in the fact that a great temperature is requisite to perfect the accretions of plants. Seeing, then, that heat is now naturally at its highest point, it follows that it should be the same in all plant houses; and hence a too liberal admission of air is unwise and improper, and it is better to counteract the agency of a high temperature by supplying a little more water. Still, it must not be assumed that, otherwise than by comparison with its temperature, this month should be regarded as the one in which most water is needed; for vegetation requires more actual moisture in May and June than at any subsequent epoch. Syringing may be daily continued, and shading is highly needful to all plants with a very tender tissue. Multiplication by cuttings is to be performed wherever it is necessary.



Saccolabium denticulatum.

SACCOLÀBIUM DENTICULÀTUM.

(TOOTHLETTED SACCOLABIUM.)

CLASS.	ORDER.
GYNANDRIA.	MONANDRIA.

NATURAL ORDER.

ORCHIDÀCEÆ.

Generic Character.—*Vide* Vol. vi. p. 97.

Specific Character.—*Plant* epiphytal, caulescent. *Stem* strong, erect, slightly zigzag on account of the joints, which are scarcely half an inch from each other, bearing pendulous roots towards the base. *Leaves* large, oblong, acute, partially embracing the stem at the lower end, dark green. *Racemes* protruding laterally, many-flowered. *Peduncles* rather more than an inch long, very stout, drooping a little at the extremity. *Sepals* and petals similar to each other, oblong, nearly obtuse, greenish yellow, profusely dotted with reddish brown. *Labellum* large, with a yellow pouch, expanding into a white open margin, which is minutely toothletted.

In flowers, as in every other class of interesting objects, there are two kinds of beauty. The one, in the plenitude of its existence, fixes our attention, and positively commands attachment; while the other is not so readily discovered, and requires to be searched after, as well as fully examined, ere it creates any decided impression in its favour. And if it be true that the pleasure which results from the exercise of our faculties is more grateful than that which intuitively seizes us, the delight occasioned by witnessing a flower whose charms lie concealed from vulgar gaze, must, when weighed against that produced by the exhibition of a more gaudy blossom, be at least equal in intensity, and much more calculated to endure.

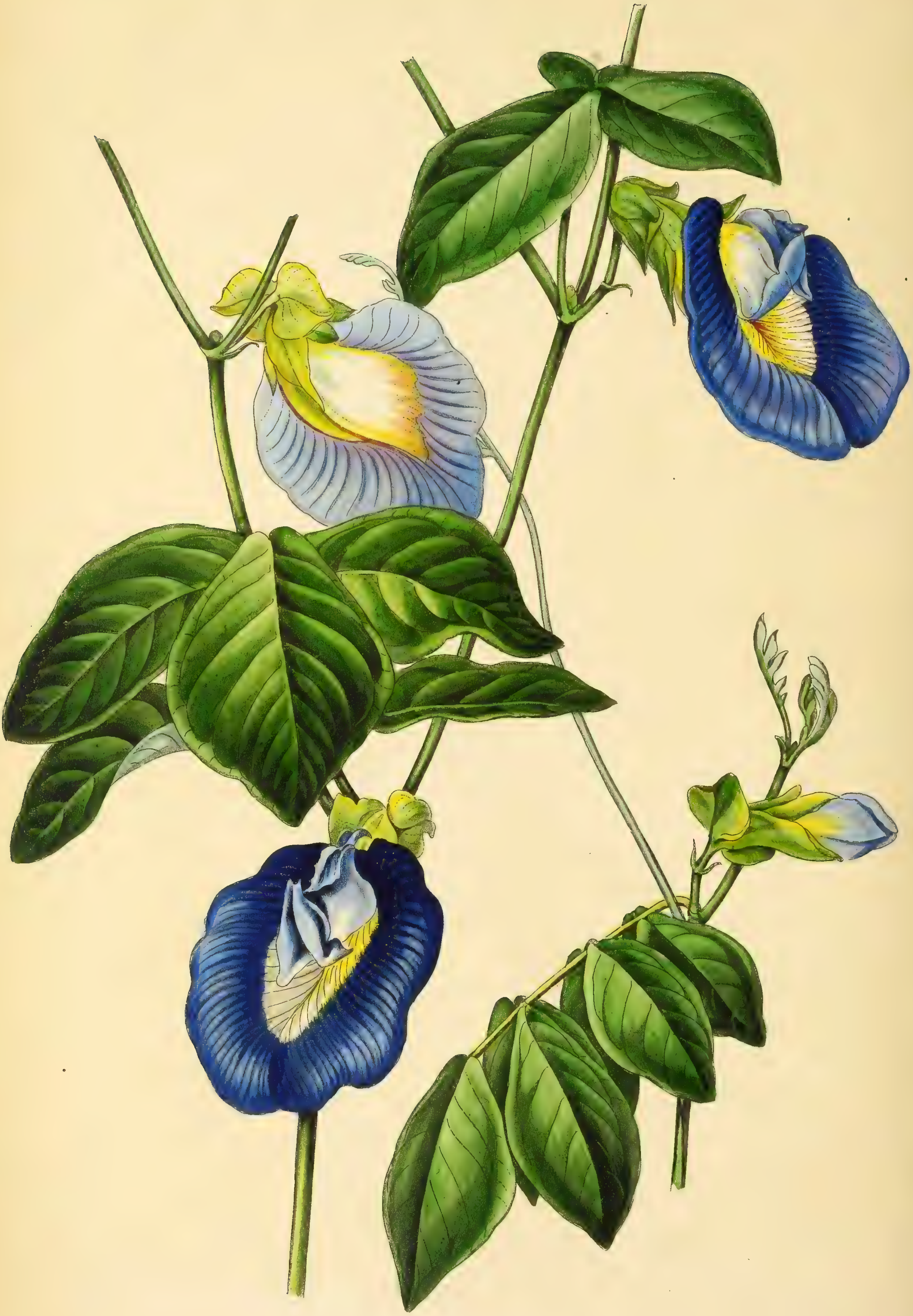
There are not a few of those who even profess to be lovers of Nature, to whom the minuter graces with which she so richly studs our earth are as yet a hidden treasure. They stoop not to scrutinize the finer forms of vegetable being, much less to avail themselves of the optician's assistance by subjecting them to a magnifying process; and hence the more delicate and refined emotions, arising from this richly-remunerative study, are to them completely unknown. We recommend such a pursuit, however, to all who have taste enough to discern the higher beauties of a flower, and assure them that from the smallest blossom they may often extract the most exquisite enjoyment.

The elegant little plant, of which a figure is now given, will aid in establishing the accuracy of these observations. Some may be inclined to regard it as absolutely insignificant, and others, perhaps, will not bestow on it more than a hurried glance; but in our eyes it contains much to elicit admiration. The flowers are larger and more showy than those of *S. calceolare*, (figured in a previous number,) and they are, besides, more prettily marked, and display a greater variety of colour. It has, further, a fine, vigorous, healthy appearance, which is not the least of its good qualities.

Mr. J. Gibson, in his exploration of the district covering the Khoseea Hills, in Eastern India, found *S. denticulatum* growing on trees, at an elevation above the sea of about 2000 feet, and brought plants of it to His Grace the Duke of Devonshire's seat at Chatsworth, in 1837. It there flowered in the spring of 1838, when our drawing was executed, and living specimens still exist in His Grace's collection.

In common with all other species of the tribe, it is most aptly cultivated when fastened to a rough block of wood, which can be allowed to depend, on copper wire, from the roof or other parts of the orchidaceous house. Sufficient experience has not yet been attained in the treatment of epiphytes to enable us to select one kind of wood which is superior to another for this purpose: still, as we have before said, that which has a rugged and durable bark is the most appropriate. An eminent cultivator, with whom we lately conversed, uses oak wood very sparingly, because, from the well-known astringency resident in it, he has imagined that some plants have been injured. Logs of the common *Robinia* seem to be preferred in the London collections; and where cork-wood can be procured, it is, unquestionably, in all respects the best.

A powerful excitation, consisting of heat and moisture, is requisite for our plant in the summer months; at which period, and indeed at all times, it should have some sphagnum moss secured round the lowermost roots. In winter it may be kept nearly dry, and in a state of torpidity. It must be increased by cutting off the upper part of the plant, and treating it as an independent specimen.



Clitoria Ternatea.

CLITÒRIA TERNÀTEA.

(TERNATEA.)

CLASS.
DIADELPHIA.

ORDER.
DECANDRIA.

NATURAL ORDER.
LEGUMINÒSÆ.

Generic Character.—*Calyx* furnished with two large bracts at the base, five-cleft. *Vexillum* large. *Stamens* diadelphous, inserted along with the petals above the base of the calyx. *Style* rather dilated at the apex. *Legume* linear, compressed, straight, two-valved, acuminated by the base of the style, one-celled, many seeded. *Seeds* usually separated by cellular substance. *Don's Gard. and Botany.*

Specific Character.—*Plant* sub-shrubby, evergreen. *Stems* twining, pubescent, branching at the axil of each leaf. *Leaves* with from two to four pairs of ovate mucronulate leaflets, and a terminal odd one, nearly smooth, but sometimes having a few minute hairs. *Stipules* very small, awl-shaped. *Bracts* large, roundish. *Calyx* tubular, with five lanceolate segments, remaining in a dry state around the base of the seed-pod. *Flowers* of a considerable size, bright blue. *Legumes* long, slightly downy.

Synonymes.—*Clitoria spectabilis. Lathyrus spectabilis. Ternatea vulgaris.*

This handsome plant was first brought beneath the notice of botanists and floriculturists as long ago as the year 1739. From that period down to the present, it has been erroneously considered by many as an annual species, and slighted accordingly. Such an opinion probably had its rise in the mode of culture which has occasionally been pursued. Instead of treating it as a stove plant, it was, from the facility with which it ripens seeds, raised anew each spring as a half-hardy annual, and transferred to the open flower-border; where, being unprotected on the approach of winter, it was destroyed by cold.

From circumstances similar to the above, this plant has not been an isolated example of false notions being imbibed respecting its habits. Notwithstanding the evident bent of cultivators rather to supply a plant with too high a temperature than to suffer it to be too much exposed, here is an instance, out of several others that we might mention, in which a contrary method has been practised. When, on the other hand, it is retained in a stove, to which a moderate amount of heat is furnished, it assumes quite another appearance. The stems, instead of perishing yearly, become shrubby at the base, the lower leaves remain through the winter without withering, and it is the upper branches alone that exhibit any signs of decay. Its natural habit is, therefore, decidedly suffruticose, and that to which it has been reduced in our gardens is simply a constrained one.

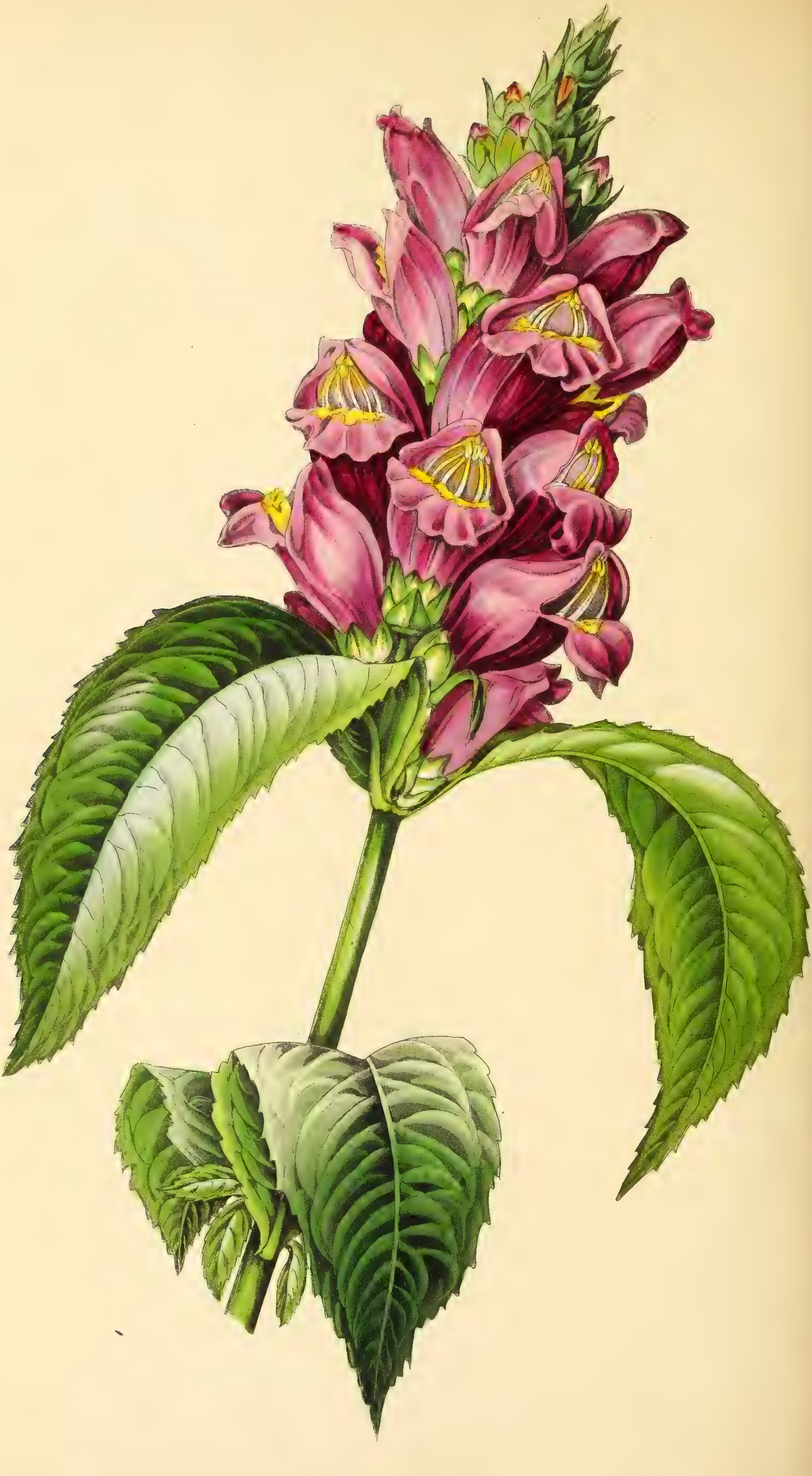
We do not intend by this to reprehend the particular management specified. For, although we have not yet seen it in operation,—perhaps because the plant is far from being generally grown,—it is very likely a judicious plan of procedure, and may elicit more of the true beauty of the species, as well as occasion much less trouble and expense, than a more genial system. We merely desire to correct the prevailing belief that it is either annual or herbaceous, unless rendered so by circumstances.

Miller, the celebrated author of some of our first works on gardening, states that the seeds were primarily introduced to Europe from Ternate, one of the Molucca Islands; from which cause, it was originally established as a genus by Tournefort, under the name of *Ternatea.* Linnæus, however, thought it requisite to alter this, and apply the generic title it now bears. Miller again observes, that there are double-flowered varieties of *C. Ternatea*, some with blue, and others with white blossoms, which will not ripen seeds with us, and these must consequently be imported from the East Indies. He adds, that seeds which he received in three different years invariably produced plants which bore double blossoms; and, as registered in the *Botanical Magazine*, " the same happened to Commelin in two succeeding seasons, which is difficult to account for, if they are only accidental varieties of the single-flowered kind. The leaves of the double sort, as figured in the Hortus Amstelodamensis, are sharp-pointed, so that, perhaps, what we have followed others in recording as only varieties, may be two distinct species."

Our subject is, without question, the single-flowering kind; and we have not observed it to vary. Specimens of it were transported from the East Indies to Chatsworth, by Mr. J. Gibson. From one of these, which was sent to His Grace the Duke of Devonshire's gardens at Chiswick, the drawing now submitted was executed. It is managed by Mr. Edmonds as a climbing stove plant, covering a trellis from five to six feet high, and blowing at various times during the summer. Not more than three or four flowers are expanded at once, and it is apt to become shabby if not freely watered and syringed. A mixture of loam, heath-soil, and sand, the former in the greatest proportion, is used in potting it, and it is kept continually in the stove.

As cuttings do not root very speedily, and seeds are abundantly perfected, it is better to multiply it by the latter, sowing them in any light soil in the spring, and placing them in a moist temperature.

Clitoria is derived from *clitoris*, an anatomical term, a resemblance to the subject of which has been fancied to exist in the flower. The application of the specific name has already been explained.



Chelone obliqua.

CHELÒNE OBLÌQUA.

(OBLIQUE-LEAVED CHELONE.)

CLASS.
DIDYNAMIA.

ORDER.
ANGIOSPERMIA.

NATURAL ORDER.
SCROPHULARIÀCEÆ.

Generic Character.—*Calyx* five-parted, tribracteate. *Corolla* ringent, ventricose: upper lip emarginate, lower one trifid, sterile. *Stamens* didynamous, with a sterile filament, which is shorter than the rest; *anthers* woolly. *Capsule* two-celled, two-valved. *Seeds* surrounded by a membranous margin. *Don's Gard. and Botany.*

Specific Character.—*Plant* perennial, herbaceous. *Stems* jointed, hollow, about two feet high, with distant leaves, and occasionally branching from the axils of the upper ones. *Leaves* opposite, decussated, oblong-lanceolate, acuminate, rather oblique, strongly nerved, with numerous serratures, and having small hairs at the nerves and teeth. *Spikes* terminal, dense. *Bracts* in threes, ovate, pointed, middle one the largest. *Calyx* five-parted, with oval, pointed segments. *Corolla* half-ringent, reddish-purple; tube short, narrow; throat spacious; limb contracted; upper lip obtuse, emarginate; lower one curved downwards, trifid, bearded within. *Fertile filaments* four, white, hairy: the fifth red. *Style* the length of the stamens; *stigma* obtuse. *Capsule* nearly globular, smooth. *Seeds* numerous, imbricated downwards.

Synonymes.—*Chelone purpurea. Digitalis mariana.*

Had our Magazine been influential solely in bringing old and valuable plants into fresh repute, and imparting a stimulus to their cultivation, we should have great reason to be satisfied with our exertions, and to continue them with the same spirit. None of our contemporaries, that we are aware, admit figures of species that have been long known in Britain, and cast aside simply for that reason; their purpose being rather to give new botanical information than to attempt to induce floral taste, or to lead cultivators to select worthy objects for the exercise of their skill. The two latter ends are decidedly those which we always keep in view, and consequently, novelty in a subject is never, unless accompanied with more durable characteristics, sufficient to gain its admission to our pages; while many of those plants which the fastidious hunters after variety would only despise, are frequently both recorded and faithfully figured.

It is alone for its very ornamental character, and not because it is either of recent introduction or exceedingly scarce, that we have here supplied a plate of

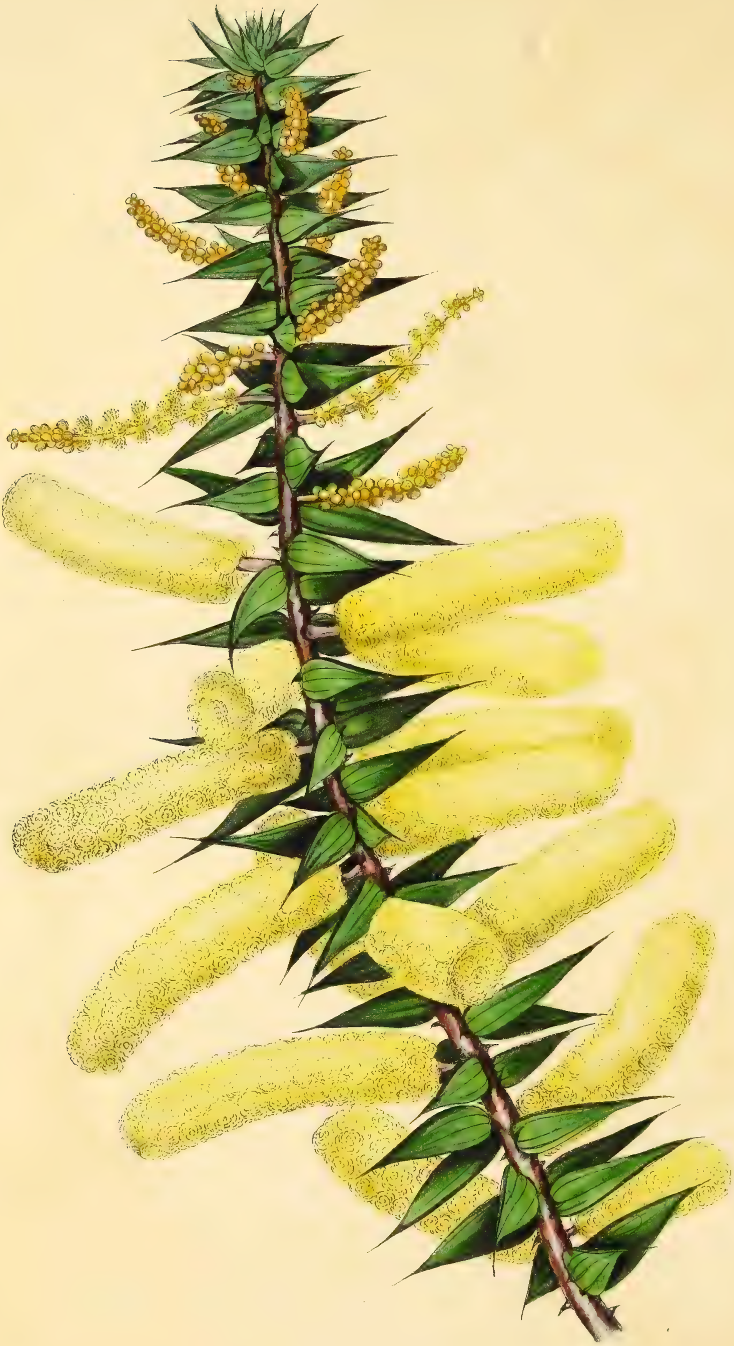
Chelone obliqua. It doubtless exists in most of the older establishments of this country, at least in such as yet preserve their antiquated aspect and system of management ; but being a plant that even the cottager could cultivate with the greatest facility, and furthermore distinguished for the compactness of its growth, and the profusion as well as showiness of its flowers, all who allow perennial herbaceous species a place in their gardens should be careful to secure several specimens. And since this suggestion applies to every person who devotes the smallest spot of ground to flowers, the recommendation is of course addressed to the whole of that extensive class.

Equal to any species of *Pentstemon* in the handsomeness of its blossoms,—for what is lacking in colour, compared with some of the magnificent members of that genus, is made up in size,—there is none of the difficulty in its management which is almost universally attendant on theirs, nor is there the slightest degree of the same liability to destruction by the common conditions of British winters. Its culture is, in fact, of the easiest possible description. All thoroughly hardy herbaceous plants, and this among the number, merely need parting and moving each year, or once in two years, and if they are planted in a loamy soil, they cannot fail to succeed. *C. obliqua* may, however, be suffered to form a mass, at the roots, of a foot or more in diameter, because it is when a clump of this kind is all flowering together that the highest effect is produced.

Mr. Miller, an excellent horticulturist of the middle of the last century, introduced this plant in the year 1752. It is found by the sides of rivulets on the high mountains of Virginia and Carolina, in North America, and is supposed to prefer a damp shaded situation. The last of these positions is not at all essential, and it will thrive quite as well in an open border. A multiplication is obtained by the division of the plant at the roots.

From the nursery of Messrs. Young, Epsom, where a great number of beautiful herbaceous plants are admirably grown, our present figure was prepared in the month of September, 1839. It blooms during the principal part of the autumn, growing to the height of from eighteen inches to two feet, and each stem developing a terminal spike of flowers similar to that now exhibited.

From the imaginary resemblance in the figure of the corolla to that of the shell of a tortoise, Tournefort originally named the genus. It is closely related to *Pentstemon*.



Acacia oxycedrus.

ACÀCIA OXYCÈDRUS.

(SHARP CEDAR.)

CLASS.
POLYGAMIA.

ORDER.
MONŒCIA.

NATURAL ORDER.
LEGUMINÒSÆ.

GENERIC CHARACTER.—*Vide* Vol. iii. p. 145.

SPECIFIC CHARACTER.—*Plant* an evergreen shrub. *Stipules* assuming the form of spines. *Leaves* scattered, or inclining to a verticillate arrangement, linear-lanceolate, terminating in a sharp point, three-nerved, glabrous. *Spikes of flowers* axillary, solitary, about an inch and a half long. *Flowers* dense, yellow, four-cleft.

SYNONYMES.—*Acacia pugioniformis. A. taxifolia.*

To the botanic student, and others who seek to delve into the mine of vegetable nature with the view of exploring her secret processes, there are features in the genus *Acacia* of a highly interesting description, and which serve to show something of the sort of metamorphoses that certain plants undergo. We refer chiefly to the dilatation of the leaf-stalk in some species, throughout the early stages of their progress, so as to give it the appearance of an actual leaf, and the protrusion from the extremity of the phyllodia thus produced, in the second or third year, of leaflets possessing the structure natural to the plant; thus proving the real character of the expanded petioles. This is a very curious fact, and one which must indubitably tend to render the hypothesis of botanists concerning the changes of which different parts of plants are susceptible, being all referable to one type, in some degree plausible; although, in the case under notice, when maturity is attained, such phenomena rarely occur, and they may, therefore, only be owing to the imperfect powers of the young specimens.

In the species which we now bring forward, there is another peculiarity which deserves mention. At the base of each leaf, the stipules appear in the shape of small spines. Now, thorns are known by most persons who study botany to be branches in a stunted state, and in the common Sloe they may be seen in every variety of condition, from an apparently lifeless and prickly spur to a perfect branch. Stipules, also, are no less than abortive leaves, which have not been able to elaborate themselves properly; and spines, in the instance before us, are but another form of the like abortion. Neither the effective cause nor the precise process of these transitions can be easily determined.

Without any reference, however, to its botanical features, *A. Oxycedrus* is a species which especially merits the culturist's regard. Our readers will at once be struck with the similarity in its foliage to that of *Araucaria brasiliensis.* But, beyond this circumstance, its habitude is dwarfer and less diffuse than that of the plant just pointed out, and it is decorated in the summer with numerous spikes of lively yellow flowers. It has, in short, the best habit of any *Acacia* with which we are acquainted, and ought to be proportionally valued. If a specimen be kept from growing too tall by careful pruning, plants from one to two feet high will constitute what we should deem models of greenhouse shrubs; that is, they will arrange their branches in a bushy, but not too close head, which will remain evergreen through the winter, and be liberally adorned with spikes of pretty yellow blossoms, more than an inch long, for a great portion of the months of February and March.

According to Loudon's catalogue, it was first brought to England in 1824 from New Holland. Like too many other handsome plants, it has since been almost entirely forgotten; and is now, after having lain so long unnoticed, likely to become popular. At one of the meetings of the Horticultural Society, in Regent Street, we observed a nice specimen of it in February last, exhibited by Messrs. Chandler of Vauxhall, and to these gentlemen we owe permission to take the annexed figure.

It is a plant of very simple culture. The soil in which it is potted should be, for the most part, a sandy loam, to which a little heath-soil can be added if the individual be luxuriant. Cuttings, which are not to be procured in great abundance, on account of the paucity of small shoots, will, when planted in sand or a sandy soil, under a glass, on a slight hotbed, strike root with tolerable freedom. The pruning above alluded to should be performed on two-year old plants, and need not afterwards be continued.

The Celtic word *ac*, a point, is presumed to be the basis of *Acacia;* though some say it is from *akazo*, to sharpen. Both derivations would refer to the spines resident on the stems of several of the species. *Acacia* contains a somewhat heterogenous assemblage of plants, which will probably be separated into other genera at no distant period.

TREATMENT OF THE GENUS GENTIANA.

It is the peculiar property of some plants, as much as of particular individuals among mankind, to excite esteem in the breast of every person to whom they become known, and who have the happiness to be capable of perceiving and appreciating their amiable qualities. An invisible but potent agency seems to reside in their aspect, which, on those whose hearts are sufficiently sensitive to feel its power, produces an immediate impression, and invariably leads to an attachment of the most gentle kind. While many may steel their souls to such an influence, the most worthy of the human race will, we are sure, both experience and acknowledge it; nor can any of these be indifferent to the charms of that extremely delightful group on which it is our present purpose to descant.

Gentiana acaulis, the somewhat scarce yet familiar ornament of well-arranged flower-gardens and borders, is a plant that no one can look upon without feeling admiration irresistibly incited. Nor is this a solitary star in the assemblage which it assists in composing. Other and even more glittering gems—*e. g. G. gelida* figured in our February No.—combine to constitute a perfect constellation of beauties, which, when properly aggregated and judiciously disposed, steal away the observer's affection in spite of all opposing obstacles.

It appears, on a superficial consideration, not a little extraordinary that, with such a strength of attraction, these fascinating objects should be so rarely met with, and still less commonly brought together in a bed or compartment by themselves, or assigned to their most congenial situation, a rockery. But, by taking a deeper view of the causes to which this inattention is attributable, we discover that it is the fear of losing them in the winter season, and the unfortunate disposition of cultivators to make a mystery of their management, which are its chief occasions. And here we cannot refrain from remarking, that if those who find any difficulty in preserving or rearing to perfection isolated plants or tribes which flourish in the open air, would set themselves assiduously to ascertain the real reason of failure, instead of abandoning the subject and discouraging their neighbours and acquaintance, it would generally be found purely local, and susceptible of very easy obviation.

Such we believe to be the case with regard to Gentians. Planted in a low level border, the soil of which is naturally adhesive, and necessarily saturated with moisture throughout a large portion of the year; or simply placed in positions where dampness must accumulate, while the air and the ground is everywhere loaded with fluids; they are seldom able to struggle through many winters, and this want of success is supposed to be owing to the impossibility of cultivating them in our climate: whereas it originates solely in an ignorance of the atmospheric and other circumstances in which they spontaneously luxuriate, and the consequent absence of an effort to adapt the artificial ones thereto as far as practicable.

Six or seven of the species comprised in this genus, including the beautiful *G. acaulis*, *verna*, and *Pneumonanthe*, inhabit particular parts of the British Islands, though they are likewise found in other countries of Europe. The more truly exotic kinds affect nearly the same description of localities, these last differing mainly in a single point of minor importance. As it is essential to keep facts of this nature before the mind when endeavouring to determine what is the fittest course of treatment, we shall state, in a more detailed manner, the peculiarities of position, atmosphere, and soil, which most Gentians enjoy in a wild state.

The first thing that must strike an inquirer into this subject is, that the majority of these plants are confined to elevated sites. There are certainly a few which thrive in common pasture land; and we have before us a letter from a kind correspondent, in which we are informed that a species greatly resembling the *G. gelida*, and which is presumed to be identical, "grows in great profusion in the moist peaty meadows in some parts of Bohemia, especially in the skirts of the Pine forests near Marienbad." We infer from the proximity of this spot to Pine woods, that it also must be at a considerable altitude, since Pines are seldom denizens of the plains; and many other species of Gentian are to be gathered solely on high ranges of mountains, such as the Alps, the Pyrenees, and those of Caucasus. Our own indigenous species are mostly scattered over hilly tracts, and there is only one, the *G. Pneumonanthe*, which delights in moist heathy places.

Next to the elevation of their locality, and actually arising therefrom, is to be noticed the nature of the atmosphere by which they are surrounded. This is much rarer than that in which we cultivate them, and besides the moisture of the ground being more readily carried down to the valleys on account of its relative position with respect to them, the remainder of it is more speedily dissipated into the air by the process of vaporization, which is always facilitated by the rarity of the atmosphere, because less pressure is then exerted on terrestrial matters, and there is a greater vacuum to admit them when volatilized. Moreover, although the increased altitude would seem to expose them to more piercing winds, and severer weather, by being nearly all deciduous, and completely dormant in the cold season, the effects of winds are more useful than otherwise, for they keep the earth dry and prevent precocious development. The more Alpine species are, however, fully protected by snow, which extends over them its spotless screen, and preserves around them both a bearable degree of moisture and temperature. It should be observed, too, that in mountainous regions the summers are especially brilliant, and vegetation receives the unlimited operation of solar heat and light.

We now turn to the soil. In the communication from which we have quoted, and the fact subsequently recorded concerning *G. Pneumonanthe*, it is evident that those two species prefer a humid heath-soil, the wetness of which we may fairly assume to be a transient provision of nature to stimulate their growth, rather than a constantly resident supply; as neither Heaths nor Gentians could resist the tendency to repletion and decomposition which such circumstances would superinduce. For the rest of the species, a loamy calcareous soil, which is undoubtedly to some extent blended with the substance of the rocks among which it occurs by the attrition of atmospheric and more palpable agents, is the invariable medium by which they derive nutriment, and into which their roots are extended.

The legitimate deductions from these facts could hardly, we should think, have been misapprehended, had they been allowed the slightest deliberation; and if we can now prevail on our readers to adopt the simple system about to be propounded, we hope shortly to see this lovely genus rescued from the opprobrium of inaptitude to British culture which has been so unjustly heaped upon it.

Where a rockery is possessed, and its site is duly sheltered from the keen north-easterly blasts so frequent in the months of March, April, and May, and whose action on the newly-excited shoots of these plants is, if possible, to be averted, the most suitable treatment is to plant them in its crevices. But the perfect seclusion of the spot from cold winds seems indispensable, while the disposition of the rocky materials must be such as to leave fissures whereby drainage may be most efficiently conducted. Adequately to fulfil the latter object, it is further necessary that the group be raised above the surface of the ground, and be not situated in a low or marshy part of the garden. The best sort of material for the purpose is masses of limestone rock; pieces of any kind of stone or flints may, nevertheless, be freely used. Such a rockery might be formed in a retired nook of the smallest as well as the most extensive pleasure-grounds, and various species of Alpine plants could be planted on it in conjunction with the Gentians, so as to ensure greater diversity and effect. Those who do not desire, or have a positive objection to, a feature of this order, may dispense with it by following the plan detailed in the 6th page of the present volume, and very successfully practised by Messrs. Young of Epsom.

In choosing a compost for cultivated plants of this genus, it is advisable to hold lightness and rapid permeability by water as the most desirable characteristics; and to mingle a little heath-soil with the loam employed. The least appearance of adhesiveness should be regarded with suspicion, and the soil in which it is manifest at once discarded. If maintained in the spot we have indicated, and the first symptoms of a too great collection of moisture carefully noted, as well as their cause removed, all additional attention will be superfluous. Once in two or three years, the plants can be shifted, so that each shall have a new locality and soil, and at these transplantations, they may be divided to the requisite extent. Perhaps, when the autumnal weather is excessively rainy, it may be needful to invert a small flower-pot over the more tender species; but the tasteful culturist will always have at hand a number of wooden covers, of different sizes, and similar in figure to a hand-glass, with which to shelter his choicer plants.

THE AZALEA.

In the year 1834, soon after the commencement of the Magazine of Botany, we gave some general rules for the treatment of established Azaleas and the propagation of young plants: our readers who possess this work entire, are referred to Vol. I. page 126, " *Azalea pulchra.*" We now propose to furnish an historical sketch of this beautiful genus, or rather of those tender species which, when well grown, constitute the greatest ornaments of our conservatories and greenhouses; and in so doing, we shall introduce new and practical observations on their mode of propagation and of culture which time and experience have proved to be effectual.

An able article, written, we believe, by one of the highest botanical authorities of the day, (whose name it is not our province here to reveal,) is to be seen in the *Penny Cyclopædia*, Vol. III. pp. 199, 200. We shall now extract a few abbreviated passages from it.

" Azalea belongs to the natural order *Ericeæ* (or the heath-tribe—now *Ericáceæ*). By some botanists the genus is esteemed the same as *Rhododendron*, and it must be confessed that it is difficult to point out any positive character, except the thin and generally deciduous leaves, by which *Azalea* can be distinguished from *Rhododendron*. It will, however, be more conformable to popular usage to view them apart."

In this we coincide. We will go further: for, if the texture of the foliage be admitted as evidence, and prove a line of demarcation, then, *Azalea* is not *Rhododendron*; and, in a *natural* system of botany, we are quite unwilling to consider the *flower* only as the essential index. But should the flower and fruit be insisted on as such, we still maintain that the structure and number of the stamens, the figure of the corolla, and the texture of its petals, differ materially in the two genera.

Take even the generic characters of the two, thus :—

" Azalea.—Calyx in five divisions. Corolla cut into five segments, campanulate (bell-shaped), or somewhat funnel-shaped. Stigma obtuse. Capsule 5-celled." Stamens 5, 7, or 8, rarely 10.

" Rhododendron.—Calyx 5-parted. Corolla somewhat funnel-shaped. Stamens declinate, almost universally ten; whereas those of Azalea are frequently five, insomuch that the former is referred to Decandria, and the latter to Pentandria." Capsule 5-celled.

If, notwithstanding these discrepancies, we must yield to fashion, and pronounce the two genera one, the identity of *Fuchsia fulgens* with its present congeners can be no longer tenable; for, to say nothing of the difference of habit manifest in root, branches, leaves, and flowers, we have seen instances wherein the calyx of *fulgens* has been cut into five distinct and perfect segments.

But to return to the article on Azalea above referred to, which assigns the year

1734 as the earliest period on record of the existence of the foreign species in England. We find that "*Four principal forms* exist, to one or other of which, all the species are referrible." They are arranged under four sections.

"SECTION I. Flowers covered with numerous glutinous hairs. Stamens little, or not at all, longer than the tube of the corolla."—This section comprises 1. *Azalea viscosa.* 2. *A. glauca*, called in the nurseries *viscosa floribunda.* Both are found in swamps, copses, and wet and shady woods of America.

"SECTION II. Flowers covered with numerous glutinous hairs. Stamens much longer than the corolla.—It comprises 3. *A. nitida*, found in deep mossy swamps on the mountains of New York. 4. *A. hispida*, native of the borders of lakes, and of the Blue Ridge, Pennsylvania: known here as *A. glauca.* 5. *A. pontica*, common in the Crimea, Caucasus, and the east of Poland." This is the fine yellow Azalea of the gardens, and was introduced about the year 1793.

"SECTION III. Flowers with scarcely any glutinous hairs. Stamens much longer than the corolla."—It contains 6. *A. periclymena*, or *nudiflora*, and is the origin of the numerous varieties of "American upright honeysuckle," many of which, including the old scarlet, have long been cultivated in our gardens.

7. *A. canescens*, from the barren sandy hills of the southern parts of the United States. It grows wild also on the banks of rivers in South Carolina, and on the mountains of Virginia. 8. *A. calendulacea*, orange-scarlet, found in moist places in the southern states of North America. 9. *A. arborescens*, native of Philadelphia, on rivulets of the Blue Ridge; little if at all known.

The foregoing sections comprise the hardy deciduous Azaleas of the gardens. Of their general culture, the writer says, "they succeed perfectly if planted in peat earth" (heath-soil) "mixed with about one-third, or even one-half loam. They are natives of swampy situations, where they spring up among the bushes, and are, when young, completely protected from the scorching sun." Even in our damp climate they must be screened from the sun. "Their roots run along, just below the surface of the soil, and never force their way downwards more than a few inches. They are of a delicate fibrous texture, and are easily injured. For this reason, the best gardeners never allow the soil to be either hoed or raked; it is only hand-weeded, and allowed to become mossy. Every year or two the beds receive a top-dressing of peat and loam, into which the young roots immediately strike."

To these remarks we have only to add, that the hardy Azaleas ought ever to be kept apart from the common shrubs and herbaceous tribes of the garden. They thrive well if treated as a distinct tribe, a fact we witnessed when inspecting the fine bed at Claremont in Surrey: but if once subjected to common garden tillage, a plant will be merely kept alive with great difficulty.

Handsome specimens exist in the heath borders of White Knights, Berks; but, perhaps, the very finest plants that England ever saw in groups and masses were destroyed when the noble Tilney property at Wanstead, Essex, was broken up.

After these remarks, which may prove somewhat instructive and pertinent to cultivators who have watched with pain the languishing condition of their plants, though treated with anxious solicitude, we recur to our article, and in the next section find the Indian species, which form the chief object of our inquiry.

" SECTION IV. Flowers entirely destitute of glutinous hairs. Stamens short. Corollas bell-shaped." Species 10. *Azalea sinensis*, introduced from China by Mr. Wells of Redleaf in 1826. Flowers yellow, and much resemble, as does the habit (semi-deciduous) of the plant, the yellow Pontic Azalea (species 5, above). 11. *Azalea indica*, white ; variety, 1. brick-red (*phœnicea*), 2. double purple or pale lilac, 3. variegated. 12. *Azalea ledifolia. Var.* white, purple, red.

" There exists a number of most beautiful hybrid kinds which could not be referred to any of the wild species. They have been chiefly raised at Ghent, or at Highclere in Hampshire. Their parents have been some deep-coloured variety of *A. periclymena*, or *calendulacea*,—and *A. pontica* on the other hand : the former giving colour and fragrance, the latter size, &c."

Treatment of the Indian or tender Azaleas.—" China, their native country, is subject to a long period of dry or cold weather, when vegetation continues torpid ; but during the growing season, the air is most remarkably mild and moist, with brilliant sunshine. The cultivator must adapt his practice to this natural state of things, by growing the Azaleas rapidly when they *are* growing, and afterwards allowing them to take a long rest. For this purpose, he should commence forcing them gradually in a temperature of 50 or 55° during the month of January, keeping them gently moist. In February his heat should be increased ; and as vegetation becomes more active, moisture should be more freely applied, along with a very small quantity of liquid manure : the heat should never exceed 75° or 80° till the flowers have expanded, after which, the plants should be kept growing till June or July, when watering should be discontinued, except at intervals, and they should be allowed to sink into rest ; in which state they are to remain till the succeeding January, great care being taken that during the whole growing time they are fully exposed to light, and that as much air as possible is given to them."

The foregoing remarks bear evidence of the analogical reasoning of a reflecting philosophical mind ; yet sure we are, that in our climate, where plants are under glass, and subject to a treatment, the routine of which is, of necessity, subversive of the order of nature,—he who endeavours to square his practice by that order will very frequently find himself baffled and perplexed. We have observed Azaleas exposed under a north wall in autumn, drop their leaves in succession so soon as they were introduced to the house in November. While others kept always under glass, in moist shady pits, have maintained a strong and deep verdure.

In *re-potting*, prior to starting them into growth, our author recommends, most justly, great care of the delicate hair-like roots ; and that, if it be needful to remove any old soil, rather to *wash*, " than to break it off in the rude manner too usually practised by gardeners who are ignorant of the principles of the operations which they perform." "They should be shifted into *new* pots of a larger size (i. e. *one size* larger) than before, and supplied with fresh peat and loam."

The natural habits of the Azalea may be inferred from the particulars which we have above cited on authority, and no sensible person who understands what he reads, can, we think, doubt for a moment that the roots court swamp and bog, and revolt at aridity. We allude to this natural fact, because some have assigned the origin of its name to the situation in which they affect to believe the plant delights in, *i. e.* dry parched ground exposed to a burning sun. The word Azalea is pure Greek,—it is the feminine of the adjective *ἀζαλέος—ἀζαλέα*, converted into a feminine noun, and implies a rigid parched condition. Now, if any one of the Azaleas be permitted to become dry in the ball, throughout, till it flag, that plant is either lost or in imminent peril of becoming a weakling for the remainder of its term of languishment. The word Azalea therefore is appropriate only to the hard unjuicy texture of its ripe wood; and from the facts thus established propagators may learn, *First*, that the cuttings must be in a degree juicy, yet firm; that they must retain the green tint throughout, but tending to become reddish toward the heel. *Second*, that as sun and air are required to support the established plants in health, the soil must always be moderately moist throughout. We now proceed to adduce the practical directions of a person employed at one of the first provincial nurseries of the kingdom, to which we shall apply a few experimental remarks.

"*Azalea indica*, and *sinensis*, in all its varieties, can be raised by cuttings, from April to August. These cuttings should be of the growth of the present year, become tolerably firm. Azaleas protrude, occasionally, a number of shoots from the stem, the position of which makes them resemble a whorl. Such shoots are often destitute of a leaf-joint at which to cut them across; but if they be slipped off from the main shoot with a heel, and the ragged piece of bark trimmed away, they will make excellent cuttings." In fact, slips contain a number of minute, close, embryo eyes, just above the point where they leave the stem, and these are generally inclined to develop roots. "The pots for the cuttings ought to be well drained, half their depth, with coarse crocks, then with finer pieces, decreasing in size till at one inch or little more below the rim, the fragments be very small, but not mere dust."

Upon the top of the upper crocks a thin layer (a quarter of an inch) of very sandy heath-soil is to be placed, and then the pots are to be filled with wetted silver sand, like that formerly used for letters: this is quartz or almost pure silex, capable of holding water to saturation as a quicksand, without binding or yielding any soluble or decomposable extracts, which could tend to promote chemical action near the heel; where all that is required consists in closely compressing the soil about the cutting, to the exclusion of air and retention of simple moisture.

"The cuttings are to be inserted so deep as to pass the sand and reach the heath soil, and closely to, or remote from, one another, as circumstances indicate. The pots are then to be placed on the soil of a melon frame that retains a gentle bottom heat," (a sanded surface would be best,) "and kept shaded from the sun, but not covered down with either hand or bell glass. In this situation, with due attention to watering, the cuttings may probably protrude roots in a month." This condition will be indicated by the growth, for we have known an entire pot of shoots to remain green during six months without the production of a single fibre.

When rooted and growing, they are to be removed to the greenhouse or cold frame till the young plants be hardened, and established before being potted off, which they may be in ten days or a fortnight. Each plant must be carefully raised with a flat stick inserted under it, deeply enough to raise the mass which its fibres enter; this is readily done by holding the plant between the finger and thumb of the left hand, while the right levers it out of the sand; it is then to be transferred to a small thumb-pot, first drained with little crocks, and then filled with the best heath-soil, blended with one-third of white siliceous sand, moulding a hole in the soil large enough to receive the roots; the earth is then to be cautiously pressed round each stem in the form of a low cone, to throw off water from the collar.

"When potted, the plants should be placed in a cool close frame, or under a hand-glass, protected from the sun-rays, until they fairly establish themselves. They then are to be deposited on a shelf near the glass in the greenhouse, where they must be duly attended with respect to water and air. Some may require shifting during the winter, or before, (*for they grow during the whole season*,) and the same soil is to be used with rather less sand; but they demand 'a very slight shift,' that is, from the eighth to one-half of an inch round the old ball."

To complete our directions, and if possible enable the admirers of this beautiful family to succeed in raising and preserving a stock of healthy plants, we add the following concise hints, taken from the Encyclopædia of Plants.

"*Azalea indica* is the most delicate, but flowers well in a moist heat in rough peat well drained. According to Sweet, 'it thrives best in a sandy peat, and the pots to be well drained with small pieces of potsherd; it should be set in an airy part of the greenhouse during winter, and great care must be taken not to over-water it: in summer it should be exposed in the open air, but not in a very sunny position. Young cuttings, if taken off close to the plant, and placed in pots of sand, will root readily if plunged in peat under a bell-glass.'

"T. Blake keeps his plants 'in peat and leaf-mould, always in the greenhouse, till they are in a flowering state; and then he removes them to the hothouse, the sudden heat causing the blossoms to open better.' (*Hort. Tran.* iv. 133.) J. Nairn uses the most fibrous part of peat-earth and sand; he places them in considerable heat, and always in the shade; and when the plants exhibit blossoms in March, he then raises the temperature from 50° to 60°."

The general evidence is against the use of loam in any proportion; and we must join in repudiating it, because of the great irregularity of its texture. No one appreciates loam, from the description that is given of it; hence, if employed to the extent of one-sixth only, a set of plants may be irretrievably injured. But heath-soil, (falsely called peat,) though its components may vary a little, yet contains only pure sand and black vegetable matter, and can rarely injure an Azalea.

We must not conceal the fact that none but the most adroit and experienced, aided by the best machinery, can hope to attain a set of plants in four or five weeks. Yet, if an amateur do not work speedily, he may attain his object slowly and surely, by placing cuttings in sand, over drained heath-soil, even in a cold frame ; the pot being covered with a bell-glass. Months, nay the winter, may be passed over without obtaining growth, yet roots will be protruded early in the spring, after placing the pots in temperate heat, as of a stove or gentle hotbed. We have just potted off eight or nine young plants which were so treated, and witnessed a similar result at a nursery in Berks, with a pot of cuttings taken in August 1839.

RUDIMENTS OF THE NATURAL SYSTEM OF BOTANY.

NO. IV.

Words being the principal means through which information can be imparted, it becomes of the greatest import that those employed in scientific dissertation or description should not be liable to misconstruction, or convey aught but a simple and universally recognised meaning. To obviate any mistake with reference to the peculiar phrases we from time to time make use of, and to furnish definite notions concerning the exact nature of the more tangible vegetable organs, we have before explained some of the terms most common to gardening literature, and shall, without further introduction, go forward with this task.

" Forms of *inflorescence*," says Dr. Lindley, " are occasionally, but not often, found characteristic of peculiar tribes." They are greatly varied in different orders, and even in genera and species of the same genus likewise, but there are kinds which essentially mark certain groups. The chief of them may here be noted. Composite flowers are those which have an indefinite number of small blossoms—which, from their abundance and densely segregated disposition, altogether nominally composing but one flower, and hence considered only parts of it, are called florets—collected into a head on the summits of the peduncles or flower-stalks. Each of these little florets will, if examined, be seen to display all the main features of larger flowers. Where the inflorescence thus constitutes a close cluster, it is termed capitulate.

Some sorts of plants that bear male and female flowers distinct from each other have the former arranged round a central stalk or axis. These have no calyx, and fall off in one piece when they have fulfilled their destined offices, or remained open for the ordinary period. This species of inflorescence is denominated a catkin or amentum. It is very observable in the nut, birch, alder, &c.

There is another mode of flowering, in which, beyond the main stem or peduncle that directly supports the flowers, a quantity of smaller branches are produced from that, these again divaricating more or less, and taking the name of pedicels. When such pedicels all diverge from the same point, and are of uniform length, they compose what is designated an umbel. The little lateral ramifications of a general umbel are, on account of their diminutiveness and dependency, called umbellules. Umbelliferous, or umbel-bearing plants, may be illustrated by the garden parsley or carrot, the fool's parsley, and many other indigenous weeds.

A simple flower-stem, rising erectly, and having the blossoms disposed immediately around its axis without any pedicels, has received the name of a spike. It is one of the simplest and most universal forms of flowering. If the individual blooms on this common spike have each a separate pedicel, it is then called a raceme, which is either perpendicular or drooping. Neither of these must, however, be confounded with the scape, which term applies to those peduncles that rise at once from the ground, and produce the flowers towards their extremities. A spike is said to be imbricated when the blossoms grow densely, each circle of flowers lying over those just above them, after the manner of inverted tiles.

Some flowers, again, are borne on a fleshy axis, and enveloped in a large spathaceous bract. Where this exists, the inflorescence is termed a spadix. It is peculiar to one or two Natural Orders, and must be familiar to every one in the wild *Arum.*

The varieties of raceme are numerous; but the only other one we shall notice is that called the verticillaster, which is a remote modification of the panicle. In the latter, instead of the flowers appearing singly from the points of simple pedicels as in the true raceme, the pedicels are more or less branched. Should the axis or middle stem be itself branched before coming to a regular termination, this is described as a deliquescent (literally dissolving, but referring here to the unusual divarication and the consequent absence of a general axis) panicle; and where a deliquescent panicle has very short branches, arranged corymbosely or with a tendency in the flowers situated nearest the centre of the branch to expand first, such a peculiarity is distinguished as a cyme, of which the elder and laurustinus are examples. But the cyme is, in some cases, imperfectly developed, and bears but a few flowers, as in the mint, and all plants of that description. This, then, is what is known by the term verticillaster.

Perhaps the strobilus, or cone, is more properly a kind of fruit. Yet, as it necessarily produces flowers in the same arrangement, it may be regarded as a real form of inflorescence. In some of its characteristics it resembles the amentum, but has exclusively female flowers, every one of which is protected by a large permanent scale. It gives the name of Coniferæ to a Natural Order, among the members of which the noble genus Pinus may be mentioned as being the most easily recognisable.

From the arrangement of the flowers, we advance to their more particular parts, and arrive primarily at the outer portion or calyx. One of the greatest and most prominent distinctions of the orders in this system is the position of the calyx with regard to the ovarium or fruit. If it be situated on the top of the fruit, completely cohering thereto, it is said to be superior; whereas, when placed below the ovary, and quite independent of it, the word inferior is applied. The apple, the hawthorn, and the quince, afford good instances of a superior calyx, which is, in all these, persistent, or, in other words, its apparent existence is coeval with that of the fruit. The Ranunculus, all plants which bear legumes or pods, and the bramble, exhibit a calyx which is always inferior.

It is rare, indeed, that the genera belonging to certain orders ever manifest any deviation from the common character with regard to the preceding point. A few anomalous cases are on record, but they are too trifling to merit much consideration, and certainly cannot destroy or even weaken the importance of the feature under remark.

Besides the above features, there are numerous others by which the calyx is made to assist materially in determining orders. Sometimes it is totally wanting, and when this occurs, the plant is invariably destitute of a corolla also. A large group of plants is isolated by this means. It exists, moreover, in some flowers which have no corolla, and thus becomes further useful in forming accurate distinctions. In other flowers, the calyx and corolla so strongly assimilate to each other, both being of the same colour, and occasionally of a like form, that they are not readily distinguished. It will be observed, however, that a portion of the segments is constantly exterior to the remainder, and the former of these belong to the actual calyx.

The outline of the calyx, as respects its division, is often serviceable to the botanist. It is either entire and of one sepal or leaf, or composed of a determinate or irregular number of them. Its æstivation, or the manner in which its sepals are placed during the infant state of the flower, is likewise particularly useful, as they frequently fold over each other in various ways, and open very peculiarly. Finally, the size of the sepals is alone sufficient to separate some orders, and a calyx is deemed regular or irregular according as its segments are disposed, or their shape and direction are similar or diversified.

FLORICULTURAL NOTICES.

NEW AND RARE PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR JULY.

Brasavòla venòsa. In some respects this fine species greatly assimilates to *B. nodosa*, but the flowers are said to be considerably larger, and the sepals of them more than two inches in length. "The lip is white, the other parts greenish. It is at once distinguished from *B. nodosa*, and all the allied species, by the firmness of the lip, which is more or less evidently lobed at the side, and has the veins distinctly elevated." The blossoms, during their expansion, are delightfully fragrant in the evening of the day. The leaf is rigid, erect, slightly incurved at the edges, and the spike of flowers, which becomes half-pendent, proceeds from the base of each leaf, or from the point at which it is connected with the stem. In preference to growing the species of *Brasavola* in pots, it is judiciously observed that they thrive best when tied to a log of wood, and their roots partially covered with a few lumps of heath-soil. Suspension from the top of the house is of course necessary. The present species was imported by Messrs. Loddiges from Honduras. *Bot. Reg.* 39.

Læ̀lia rubèscens. Although this lovely plant wants the size and showiness of flowers which characterize some of its congeners, it appears to us to be one of the most truly interesting species we have yet seen. The colour of the sepals and petals is a whitish cream, delicately shaded with pink, and having a tinge of green on the outside near the extremities. The labellum is of the same hue, with a yellow blotch in the centre, and a large deep purple one at the base. The petals and labellum are beautifully undulated at the margins, but the sepals seem quite destitute of this character. It has small, oblong, compressed, tetragonal pseudo-bulbs, on the top of which are situated short, solitary, stiff leaves; and the scape is protruded from the summit of the pseudo-bulbs, bearing its flowers pretty closely together near the apex. Its great charm is the very soft and pleasing tints of the blossoms. It can be cultivated as other *Lælias* in a low temperature and dry atmosphere during winter, but must have more moisture, heat, and shade in the summer season. *Bot. Reg.* 41.

Lopèzia lineàta. Without any great claims to be considered handsome, this singular plant is certainly pretty, and even ornamental. It is a greenhouse shrub, with robust and rather succulent stems, and growing about three feet in height. "It is chiefly valuable in the months of January and February, when it is covered by little insect-like red flowers, and is at that time so different in appearance from other plants of the season, that it becomes a doubly welcome acquisition." Flowers are also produced throughout the latter part of the autumn. Mexico is its native country, and it was found by Mr. Hartweg, in a district called the Banco. From seeds collected in this spot, and sent to the Horticultural Society, it has latterly bloomed in this country. Propagation is easily effected by seeds, in any garden soil; and it is supposed that it might succeed with the treatment of a half-hardy annual, if somewhat stimulated in the spring, and induced to flower before its natural period. *Bot. Reg.* 40.

Lupìnus leptocàrpus. Another of the attractive species sent home by Mr. Hartweg from Mexico, where it was collected in pine woods near Bolanos, 8000 feet above the level of the sea. It is a "hardy straggling biennial plant, growing two or three feet high, and blossoming in the latter part of summer and autumn, when it becomes a very gay decoration of the flower garden. It has much the habit of *L. rivularis*, to which indeed it nearly approaches." The flowers have different shades of blue and purple, and are apparently borne in a particularly long spike. It derives its name from the peculiar narrowness of the seed-pod; in referring to which, Dr. Lindley suggests that the form of the pods, and the number, size, shape, and surface of the seeds, furnish the best criteria for specific characters. It is likewise observable that, though dried specimens of Lupines sometimes present a shrubby appearance, they are often only the hardened stems of biennials. *Bot. Reg.* 38.

Márica hùmilis; *var.* lùtea. An interesting variety, with bright yellow blossoms. As it is doubtful whether it may not ultimately be established as a distinct species, since no botanist has yet been able to examine living specimens of the flowers, it is attached to *M. humilis* until this can be decided. For the latter species, indeed, it has a decided affinity, "being distinguished, if the drawing is quite correct, by narrower and straighter leaves, with a short bracteate stem, by longer and straighter bracts enclosing the ramules, and brighter yellow sepals, with five instead of four bars of a redder colour, and the ends of the petals white, with green bars instead of plain purple. If these features," continues Mr. Herbert, "should be confirmed by further observation, and should prove invariable, the plant may be distinguishable as *M. lutea*." It is supposed to have been received from Brazil, and is cultivated in the stove, in the same manner as the other species. *Bot. Mag.* 3809.

Oncídium pachyphỳllum. In the rich collection of Orchidaceæ at Woburn Abbey, this exceedingly fine new *Oncidium* flowered in January last, having been introduced from Mexico by J. Parkinson, Esq. "It is remarkable for its large, thick, and very coriaceous leaf, its ample panicle loaded with blossoms of a greenish yellow colour, spotted with orange and reddish purple, and not destitute of fragrance." From the drawing, it would appear to be a species of a singularly vigorous and luxuriant habitude, as both the flower-stems and leaves are unusually bold, but especially the former. The blossoms, too, are very large and showy. It is destitute of pseudo-bulbs, having the character of *O. luridum* and *Carthaginense* in this respect. The flower-spike is about two feet long, rigid, and upright. It is a worthy companion of *O. Forbesii*, though by no means so splendid. *Bot. Mag.* 3807.

Tradescàntia tùmida. The principal peculiarity of this novel species is the manifest swelling of the stems between each of the joints or nodes, and the recurvation of its deep green leaves, which curl downwards in such a manner as again to touch the stems. The flowers are developed only towards the upper ends of the latter, and appear in very dense axillary bunches. They are of a bright reddish-purple hue, and expand in the autumn. It has been raised in the garden of the Horticultural Society, where it was obtained from Mexico. "It is a greenhouse perennial of the most easy cultivation, having the same habits as the hardy species common in every garden. It grows freely in sandy loam, but is very apt to suffer from much wet or damp in winter. Like the other species of the genus, it is readily multiplied, either by cuttings, layers, or seeds." There is no marked difference, except in the points before alluded to, between this species and *T. Humboldtiana*, which has not yet been introduced. *Bot. Reg.* 42.

Zygopétalum africànum. One of the meanest members of the beautiful genus *Zygopetalum*, and even inferior to *Z. Murrayanum;* but still not altogether lacking in intrinsic interest. As far as its native region can render it worthy of notice, it is to be regarded as "the first of the genus that has been discovered inhabiting the old world." The pseudo-bulbs are of extraordinary dimensions compared with the flowers, being from five to six inches long, and of proportionate bulk. The blossoms are elevated on a spike full three feet in length, though they are individually small: the colour of the sepals and petals is a greenish yellow, much blotched with reddish brown, and the lip is pure white, slightly shaded with pale purple. "It was sent by Dr. Whitfield from Sierra Leone to the Woburn Collection," in which it blossomed in December 1839. *Bot. Mag.* 3812.

NEW, RARE, OR INTERESTING PLANTS IN FLOWER IN THE PRINCIPAL SUBURBAN NURSERIES.

Caprifòlium, *hybrid.* A splendid hybrid *Caprifolium*, received from the Continent by Messrs Young of Epsom, is now flowering beautifully in this nursery. It was stated to have semi-double flowers; but this is not strictly correct, as the tips of the corolla-segments are only of a deep yellow colour, the boundary of which is very exact, without any absolute separation. The habit and foliage is extremely handsome, and the blossoms are of a deep and brilliant hue, between crimson and scarlet. They resemble those of *C. sempervirens*, to which, and to those of the hybrid we have formerly noted as having been raised in this nursery, they are much superior. It is, altogether, the finest *Caprifolium* within our knowledge.

Galeándra — ? Messrs. Loddiges are at present blooming a most valuable new orchidaceous plant, which is supposed to be a species of *Galeandra*, but will very possibly form a distinct genus. In appearance, it approaches some Cyrtopodiums and Dendrobiums, but bears, however, wholly different flowers. These last are produced on the top of a strong erect stem, and have brownish sepals and petals, with a large pouch-shaped lip, which is of a whitish ground, prettily striped with dark pink. It is an exceedingly lovely plant, and the occasion here recorded is the second, within three or four months, of its having developed blossoms.

Gompholòbium ténue. There is a yet greater gracility in the stems and branches of this species than is found in *G. polymorphum.* It is an exceedingly slender plant, with minute leaflets, and yellow blossoms of considerable dimensions. Messrs. Rollison, Tooting, have obtained specimens from Swan River seeds, and those are blossoming liberally in the greenhouse. Without being so attractive as the plant above-named, it is interesting, and merits a place in extensive collections.

LÍLIUM THUNBERGIÀNUM. Several superb plants of this showy species are flowering in full perfection at Messrs. Rollison's, Tooting. Superficially examined, it presents certain characters which are almost sufficient to distinguish it from the *L. aurantiacum*, which has been figured in this work; yet we are induced to regard them as the same. Specimens in a high state of cultivation exhibit so great a superiority in every feature, that it might very easily be mistaken for another plant. The leaves become much denser, and covered with a conspicuous pubescence, and the flowers so much larger, of a richer orange, and more numerous, that unless it is potted in a spacious vase and a nutritive soil, its true characteristics will never be fully developed. Where these points are duly regarded, it is one of the most ornamental of the family.

OPERATIONS FOR AUGUST.

ALTHOUGH the greater quantity of hardy flowering herbaceous plants and shrubs are now beginning to shed their blossoms and lose much of their beauty, this is just the season at which well-managed flower gardens confer most credit on the gardener, and exhibit the highest contrast to those conducted on the almost exploded system of collecting the most complete variety of plants into one bed. Petunias, Verbenas, and hundreds of beautiful sub-shrubby, herbaceous, and annual plants, which are assigned to small and distinct compartments, are at present intertwining their branches, and apparently vying with each other which shall excel in the profusion and richness of their brilliant floral ornaments. Now, therefore, is the time for the eye of taste to examine the effects of colours; to investigate their combinations, contrasts, and diversities; so that, at a future period, the arrangement may be improved, and the general grouping be made more consonant with judgment and propriety.

We do not intend here to offer any hints on the subject, contenting ourselves with drawing attention to it, and inviting inquiry. Of its influence, nothing surely need be said; since the most superb display of flowers would be really disagreeable if their hues were not tastefully mingled in appropriate order.

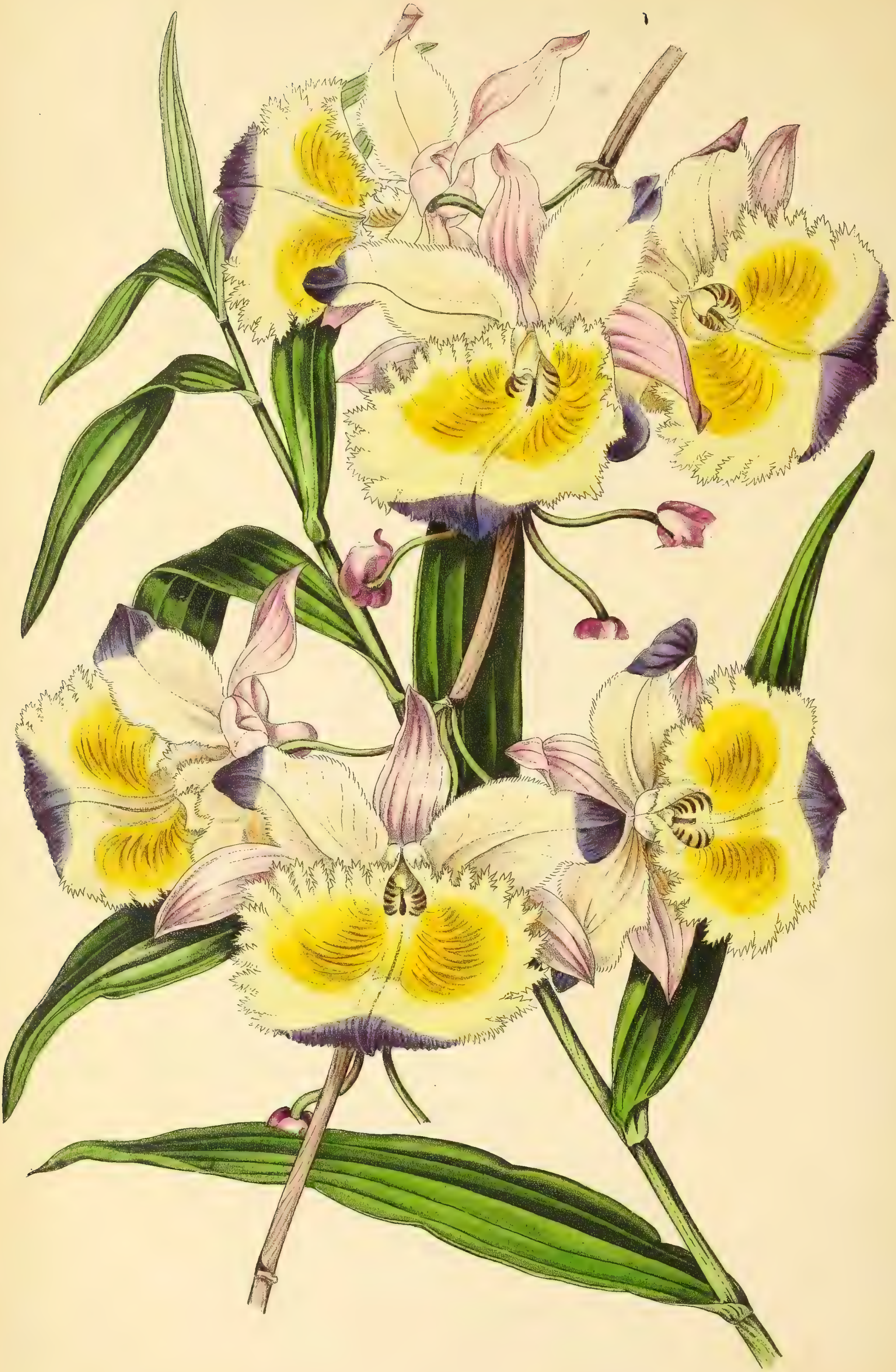
The propagation of all the tender plants to which allusion is above made may be immediately commenced. By taking off cuttings at the present time, a twofold good will be effected; for not only will the young stock be prepared and established before the advancement of winter, but the specimens from which shoots are taken will be rendered more prolific of flowers by the multiplication of young and blooming branches. The cuttings can, besides, be struck in a lower temperature than they would require if left another month, by which means both heat will be economized, and the young plants retained in a much more healthy condition.

Those who have carried out our former recommendations, and transferred the most languid and drooping of their greenhouse plants to an exposed situation and a free unlimited soil, should take care not to permit a too great exuberance, and to repot them by the end of the month. Were they suffered to remain later in the ground, it would be impossible again to compel their conformity to a more artificial culture without materially injuring them. The end of the change being merely to restore them to vigour, and not to impart a luxuriance equal to that they naturally attain, these restrictions are of the utmost importance.

Where roses are to be budded, the operation ought to be performed about the latter part of this month. It is remarkable that the ancients, to whom this practice was no mystery, are represented by Virgil as inserting their buds on the joints of the stocks, from which a bud has been replaced, and not in the smooth part between the nodes, as is the custom of our age. There cannot be a doubt that this method is worth reviving: at least, the chances of success from such a course seem to us to be increased. If the flow of fluids be naturally directed to the buds, the development of a foreign bud united to that point must be more rapid and less likely to fail than that of one placed where it will have to create a new centre of supply. Numbers of other plants besides roses can also be budded advantageously, as it is easy, by thus connecting allied species, to add much to the interest of even ordinary shrubs.

Towards the middle of the month, when it is clearly obvious that all kinds of greenhouse and hothouse plants have nearly ripened their annual growth, it will be necessary to begin admitting air far more liberally than during the previous quarter of the year. We have frequently urged the summer confinement of plant-houses, and would now, with similar force, declare ourselves in favour of the most profuse supply of air from August till October. This will do more for saving fuel in the winter than any other means that could be adopted. It will give to the plants a considerable degree of hardihood; dry up all superfluous moisture that may stagnate in the pots; and keep every specimen in that condition which, while it verges on dormancy, maintains the pleasing appearance of perfect activity.

No regulations can be laid down which would apply to all orchidaceæ; but the most of them, like stove plants, are fast progressing to a state of torpidity. The heat of the orchidaceous house should consequently be diminished before September opens; the administration of water being likewise lessened, and shading only furnished on excessively hot or shining days. Young specimens and peculiar species do not fall beneath the foregoing remarks. These may be sometimes stimulated, and with the greatest prudence, while winter is most fiercely raging, as well as throughout the entire year. Such specimens as are taken to the drawing-room for the purpose of conserving their flowers, must be there maintained in a close atmosphere, and not subjected to gusts of cold air, or even to any influence from without; for it is of the highest moment that they be sustained by circumstances approximating as nearly as convenient to those they have left. A moist atmosphere and great heat are not of course to be desired; but the opposite extremes should be sedulously avoided.



Dendrobium Devonianum.

DENDRÒBIUM DEVONIÀNUM.

(DUKE OF DEVONSHIRE'S DENDROBIUM.)

CLASS.
GYNANDRIA.

ORDER.
MONANDRIA.

NATURAL ORDER.
ORCHIDĀCEÆ.

Generic Character.—*Vide* Vol. iii. p. 77.

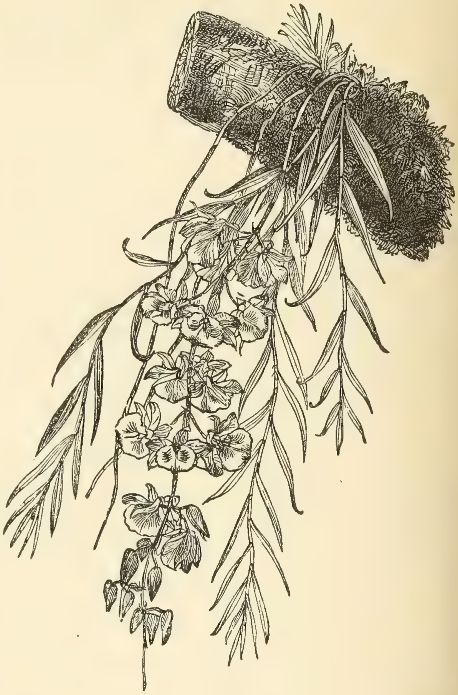
Specific Character.—*Plant* epiphytal, caulescent. *Stems* very slender, drooping at the extremities, jointed; nodes rather distant. *Leaves* alternate, ovate-lanceolate, partially clasping the stem at the base. *Flowers* most frequently in clusters of three, appearing towards the points of the older stems, large; *sepals* nearly oblong, acute, cream-coloured, with a considerable dash of pinkish purple; *petals* somewhat broader, fringed at the edges, with less of pink, and a stain of a deeper hue at the points; *labellum* broadly roundish, slightly concave, with an acute, recurved, purple extremity, deeply and very beautifully fimbriated round the margin, and having a spreading orange-coloured blotch on either side of the centre.

To draw Indian Orchidaceæ from their secret haunts, communication with the Botanical Gardens established by the Hon. East India Company at Calcutta, and those more recently formed in other districts, however useful it may be in obtaining the species that exist at or near such establishments, cannot be fully effectual; and it is only by sending special agents to a prescribed tract, with instructions to explore it perfectly, that we can hope completely to furnish our orchidaceous houses with the most specious of tropical epiphytes.

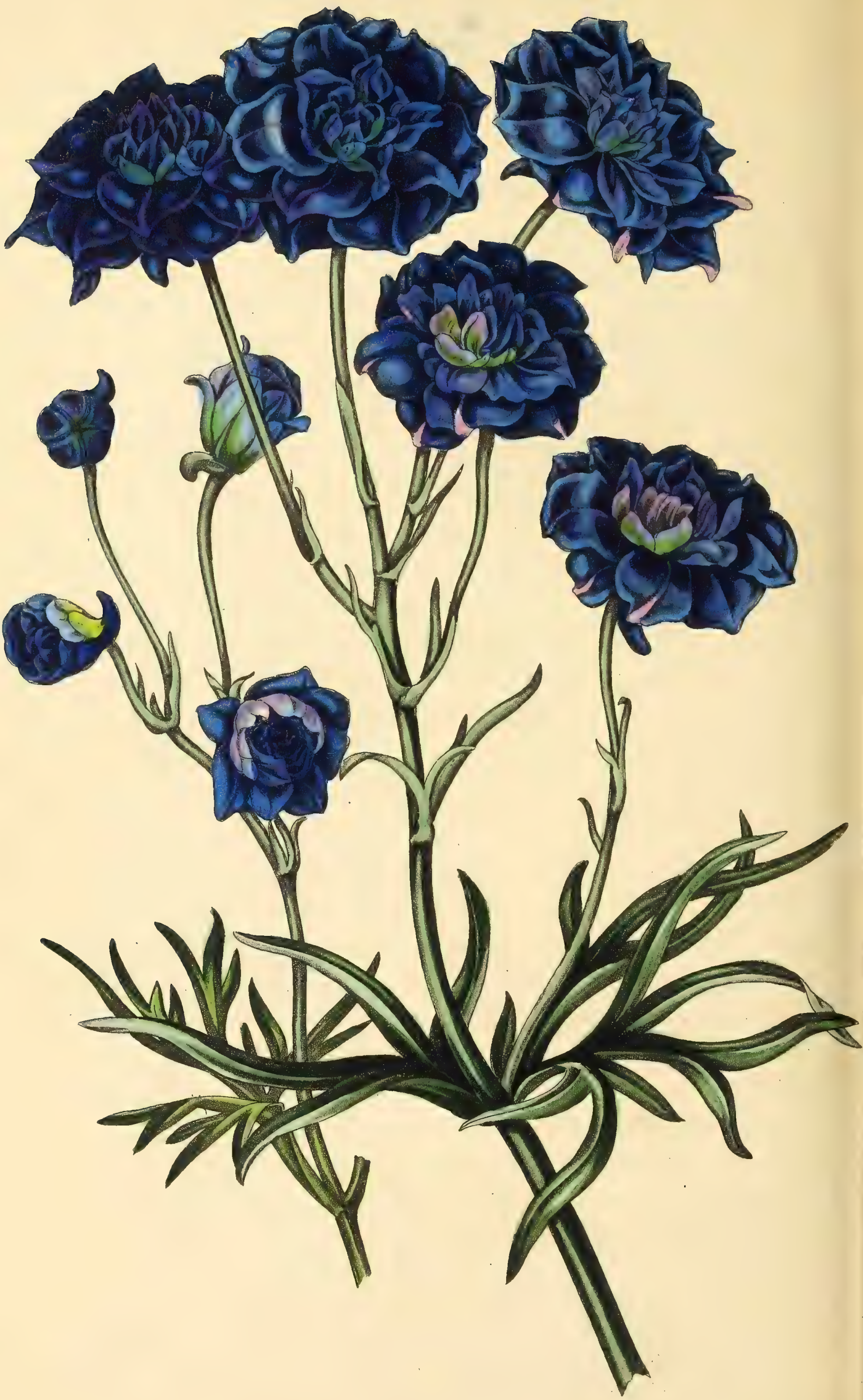
It will be in the recollection of every one conversant with floricultural affairs, or who favours these pages with a perusal, that His Grace the Duke of Devonshire despatched a collector to the East Indies on this plan in the year 1835, who, returning in 1837, brought numbers of plants that were new to Britain. Our Magazine has been the vehicle of depicting a portion of these, and it affords us great gratification to be permitted to give publicity to another which promises to surpass most of its allies in loveliness, and is therefore precisely the plant best adapted to bear the title of that munificent nobleman through whose aid it has been discovered. For if the patrons of floriculture are to be commemorated in flowers whose merits betoken the degree of support which the individual after whom they are named bestows on the science, it is only meet that one of the most noble should be associated with the loveliest that can be selected.

D. Devonianum was revealed to Mr. Gibson during his tour over the Khoseea hills, hanging from trees in excessively dense woods, at about 4500 feet above the level of the sea. From its disagreeably rigid habit in the wild state, and the absence of any traces of flowers to determine its character, its introduction was a matter of question. Fortunately, specimens of it were secured, in order to learn what its blossoms would prove, and the event has shown that no dependence is to be placed on habitude, as the flowers are among the most beautiful of which *Dendrobiums* can boast. This was demonstrated to the collector before his return, a plant having displayed a wreath of its blossoms while on the voyage home. From plants which were carried in safety to the splendid collection at Chatsworth, flowers were again produced in April and May last, when the accompanying plate and sketch were executed.

There is a great resemblance between this species and *D. æmulum;* so much so indeed, that the two can scarcely be distinguished except by the flowers, and the acute terminations of the leaves in *D. Devonianum.* In the delicate colours of its blooms, their transparency and airiness, and the singularly interesting fimbriation of their labellum, it will probably not lose by comparison with any known orchidaceous plant.



The proper way of cultivating it is to plant the specimen in a wooden or wire basket, filled with potsherds and sphagnum moss, and suspended from chains, rods, or pillars, a short distance beneath the roof of the tropical orchidaceous-house. The stems should not be supported in an erect position, but allowed to fall over the edges of the basket, as we have experienced their tendency to decay when in an unnatural posture. Pieces of the stem, placed in moss, and watered at first with care, will develop roots, and readily make an independent growth.



Delphinium sinensis, var. plena.

DELPHÍNIUM SINÉNSE, *var.* FLÒRE-PLÈNO.

(CHINESE LARKSPUR; DOUBLE-FLOWERED VARIETY.)

CLASS.
POLYANDRIA.

ORDER.
TRIGYNIA.

NATURAL ORDER.
RANUNCULÀCEÆ.

Generic Character.—*Vide* Vol. v. p. 265.

Specific Character.—*Plant* most probably annual. *Stems* scarce, growing about a foot high, branching freely, covered with short down. *Leaves* with three principal divisions, each subdivided into a number of irregular linear-acute segments, glabrous above, paler green and very slightly pubescent beneath. *Bracts* two or three inches below the flowers, subulate, hairy like the stems. *Flowers* large, single, bright blue, elevated solitarily on long, rigid, erect peduncles.

Var. flore-pleno.—*Plant* having a greater number of stems, perennial. *Flowers* semi-double, or double, and of a rather darker colour.

If we except the double garden varieties of one or two of the most common species, Delphiniums are mainly remarkable not only for the fine profusion in which their flowers are produced, but for the brilliant blue colour of these latter. Indeed, they appear to present a richer diversity of the shades referrible to this one type than any other equally familiar genus; for while some of the sorts have pale sapphire or cerulean blossoms, many are of the deepest and most intense lapis-lazuli which can be conceived. *D. grandiflorum* is an especially magnificent species; and its flowers, when liberally borne, are too dazzling to be gazed upon without greatly weakening the visual nerves.

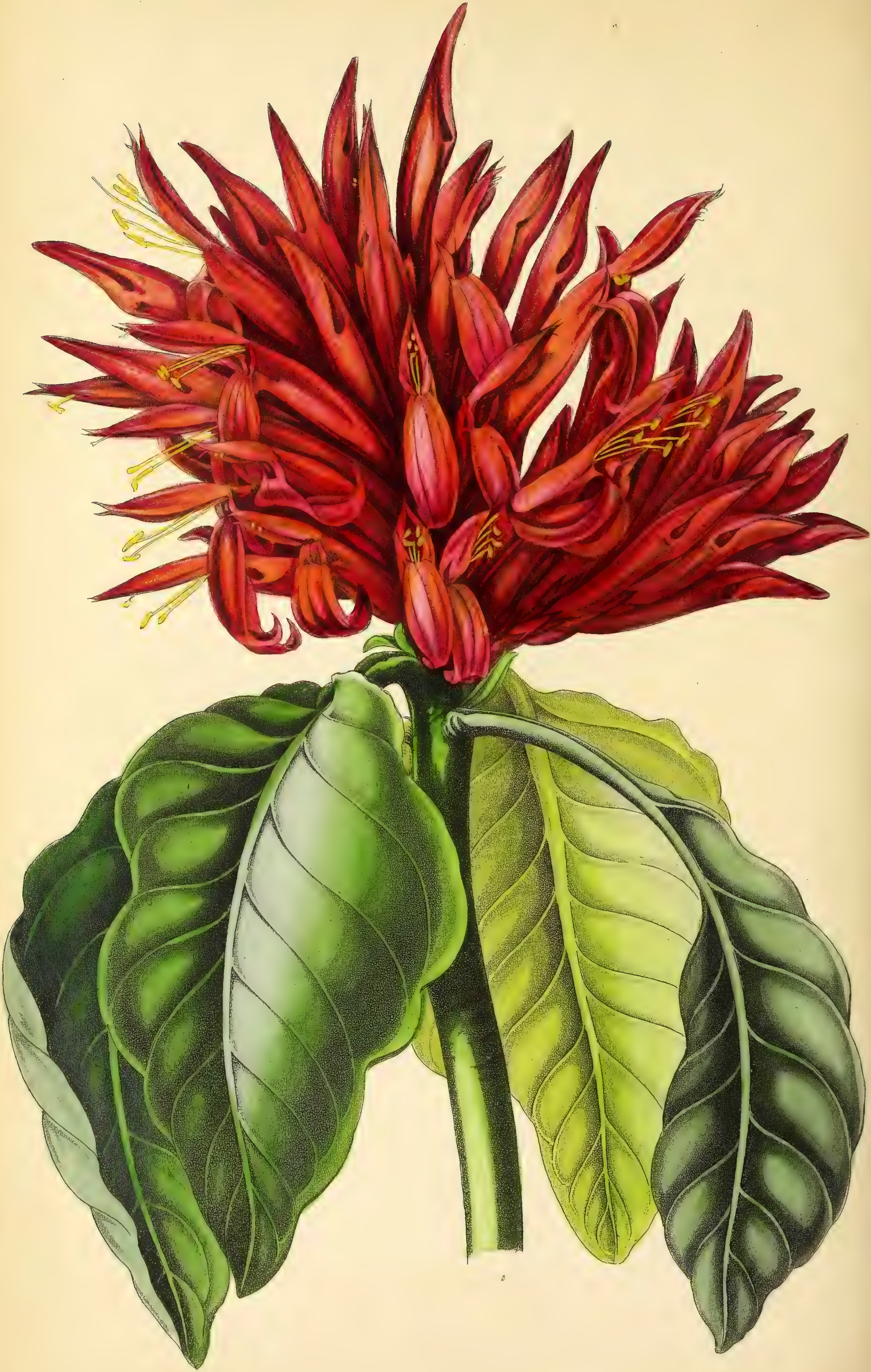
Of all that we are acquainted with, however, the species of which the subject of our figure is a double-flowered variety, has blossoms of the largest size and the brightest hue. When sown early in the spring, so as to form a dense bed of bloom during the summer months, it creates an effect too striking to be described. It is as if a considerable patch of purer and deeper ether than the far-famed Italian skies can boast were transferred to earth, awhile to grace its surface, and then to melt away into its native regions. And though the tint of our present plant's inflorescence is not so light, ethereal, and azure-like, its gorgeousness, and the elegant double character with which it is associated, render it, if possible, still more alluring.

From whatever cause the predilection may spring, it is certain that double flowers are ever the most admired. No one thinks of comparing a single-flowering Rose or Dahlia with any of those charming forms which are so extensively cultivated in gardens; and in the same manner, a single-flowered Larkspur, of any species, will not sustain its position in popular esteem when brought into competition with a double-flowering one of the same habit, unless the colour is much superior. This is not the case in *D. sinense;* therefore our variety must be a greater favourite if it were properly known; and to accomplish that object, we give it a place in the pages of our widely-circulated Magazine.

D. sinense was introduced to Britain from the Continent, with the information that it was of Chinese origin, more than twenty years back. It is considered an annual plant, and in addition to the features before named, is valuable for its dwarfness, seldom exceeding nine inches or one foot in height in the open border. From this circumstance, it is particularly well calculated for growing in beds or masses in the flower-garden, where its splendid blooms are displayed in the months of June and July. It ripens freely large quantities of seeds, which have simply to be collected and sown at the period ordinarily assigned for committing annuals to the earth. If the specimens be allowed to stand rather closely, or at about four or six inches from each other, they will not need support, notwithstanding the weight of their flowers.

Of the way in which the variety before us was brought to Europe or generated therein, we have no decided accounts. It has been grown in collections for several years, and was first made known to us in the nursery of Messrs. Young of Epsom. Messrs. Chandler of Vauxhall have likewise had it for some time, and from plants in their establishment we procured our drawing. It is barely of so diffuse a nature as its ally above noticed, and is equally if not better adapted for planting in groups. Such is the peculiarity of its hue, that no artificial colours can duly imitate it. All the attention it requires is to be occasionally transported to a fresh spot, as it is a true herbaceous plant, and will not thrive year after year in the same situation. Being apparently perennial, it is multiplied in early spring by division; or if a great many plants are desired, it may be increased from cuttings, taken off when the stems of the parents are a few inches high, removing the flower-stalks, and planting them in a prepared soil under a hand-glass. They will strike soon enough to be ready for transplanting in the beginning of July, and by the end of autumn will have formed plants of moderate dimensions, capable of flowering most abundantly in the succeeding year.

For the explanation of the generic name see Vol. v. p. 266.



Aphelandra cristata.

APHELÁNDRA CRISTÀTA.

(CRESTED APHELANDRA.)

CLASS.
DIDYNAMIA.

ORDER.
ANGIOSPERMIA.

NATURAL ORDER.
ACANTHĀCEÆ.

GENERIC CHARACTER.—*Calyx* five-parted, unequal. *Corolla* bilabiate. *Anthers* one-celled. *Capsule* two-celled, dissepiment contrary. *Seeds* covered with small netted cords.

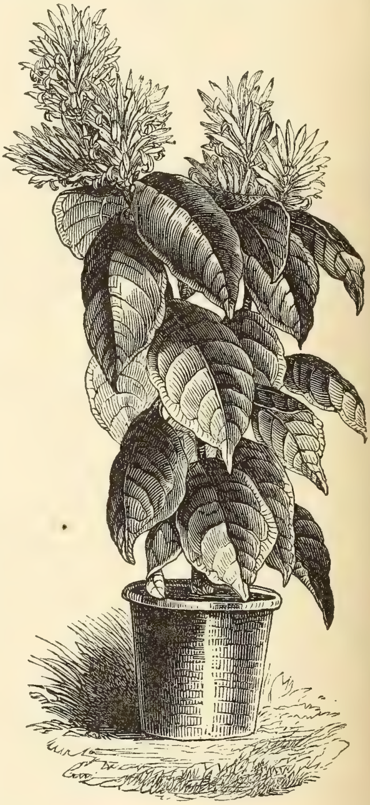
SPECIFIC CHARACTER.—*Plant* an evergreen shrub. *Leaves* oblong, acuminate, large, drooping. *Spikes* four-sided. *Bracts* ovate, very entire. *Corolla* smooth; upper lip ascending, bifid; lower one pendent, incurved, entire.

SYNONYMES.—*Justicia pulcherrima. J. cristata. J. tetragona. J. arborea. Ruellia cristata.*

BY a classification of the exotic shrubs cultivated in the plant-houses of this country into uninteresting and ornamental species, it would be found that those of the last description greatly predominate, but that many of them are so badly grown as to assume an appearance which is anything but engaging, and often the very reverse. We could mention an almost indefinite number whose aspect is rarely above, and frequently below, what may be considered a mediocre share of beauty, which might be brought, by judicious treatment, to outshine hundreds of those by which the places they should occupy are usurped. In the present instance, it will suffice to specify the very handsome plant which we have deemed eminently worthy of decorating the opposite page of our Magazine, both on account of its robust as well as vigorous habitude and foliage, and the large clusters of splendid flowers by which its stems are terminated.

Aphelandra cristata is one of those old plants which, while any person will befriend it by furnishing the soil and atmosphere it loves, will never be permanently disgraced or discarded. And yet the places are by no means scarce in which, through an imperfect knowledge of its sterling characteristics, an ill-disguised indifference, arising from the length of time it has been a denizen of our stoves, and that neglect which must inevitably result from these concurrent causes, it is to be seen in a shabby and stunted state, totally at variance with the healthy condition it maintains under congenial culture. We have, in fact, witnessed specimens, the flower-spikes of which were not more than one-third the size of the one now represented; and we have no hesitation in affirming that one which bloomed last autumn in the stove of Mrs. Lawrence, Ealing Park, and of which the wood-cut supplied is a very reduced sketch, was little short of three times as large; thus presenting, within our own observation, a difference of magnitude of six stages or degrees.

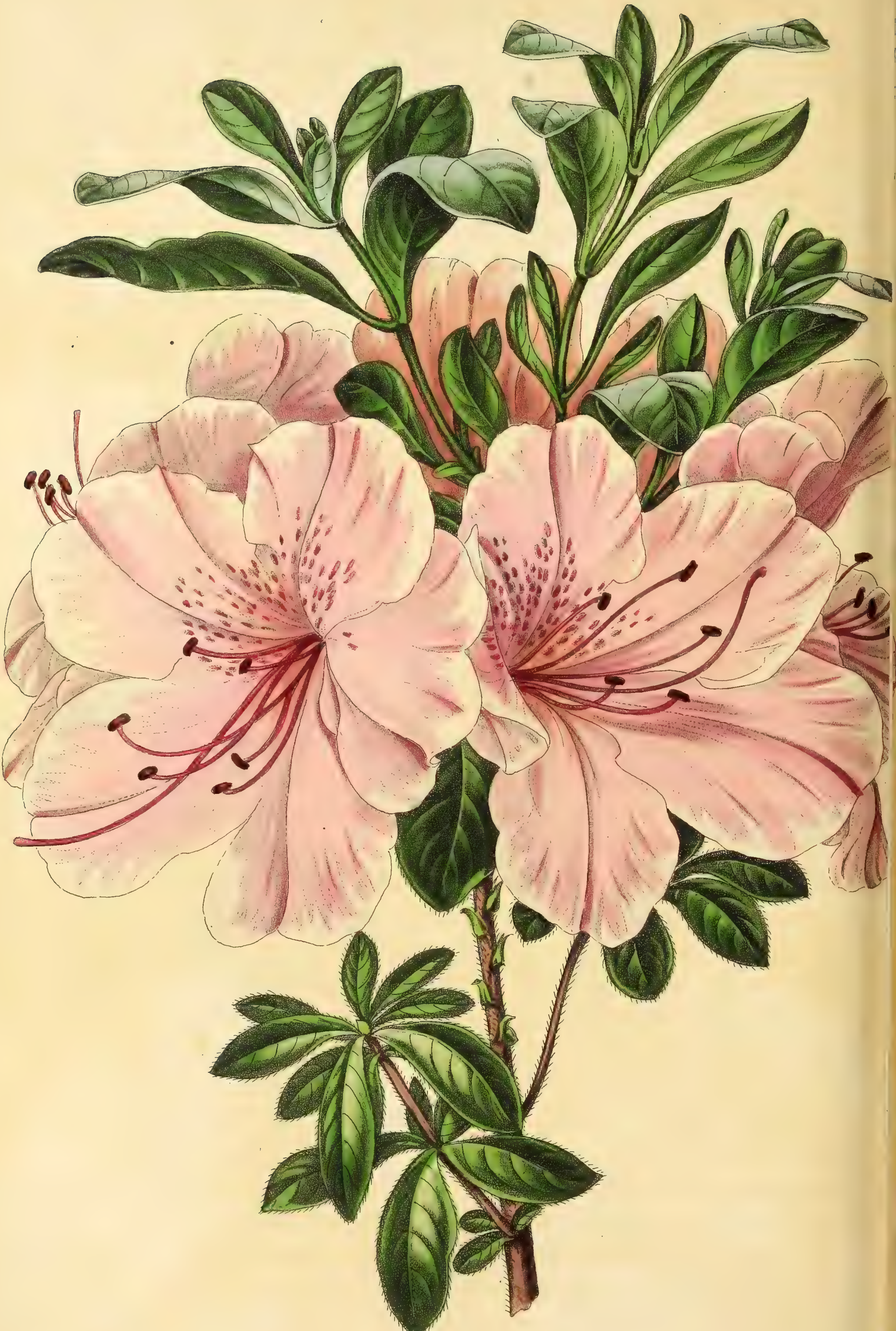
The astonishing disparity thus described could not easily be reconciled with the production of a single spike of flowers, as it is barely likely that their number and size should differ so greatly; we may therefore state, that in unhealthy plants only one spike is usually developed, whereas the more luxuriant specimens sometimes bear as many as four. Of course the causes which deteriorate the flowers or diminish their number to such an extent, operate with similar detriment on the foliage; and though the species naturally produces very noble leaves, and of a lively green, they degenerate beneath unfavourable management to miserable abortions, with a colour in which yellow and brown are alternately and indescribably blended.



When we confirm the propriety of the preceding picture by saying that it is not at all exaggerated, the influence of good culture will be forcibly apparent. The grand items in the treatment of *A. cristata* are a somewhat nutritious earth, composed of maiden loam, mixed with a small portion of heath-soil and sand, and enriched with leaf-mould or thoroughly decayed manure, with a sufficiency of pot-room, and a moist genial atmosphere in the stove during the time it is growing. If these be adequately attended to, there will be no danger of failure, and the plant will constitute one of the most splendid objects in the entire vegetable world.

Propagation must be effected by cuttings.

Aphelandra is derived from *apheles*, simple, and *aner*, male, alluding to the one-celled anther.



Azalea Indica variegata.

AZÀLEA ÍNDICA; *var.* VARIEGÀTA.

(INDIAN AZALEA; VARIEGATED-FLOWERED VARIETY.)

CLASS.	ORDER.
PENTANDRIA.	MONOGYNIA.

NATURAL ORDER.
ERICÀCEÆ.

GENERIC CHARACTER.—*Vide* Vol. i. p. 126. SPECIFIC CHARACTER.—*Vide* Vol. ii. p. 145.
Var. VARIEGATA. *Flowers* very large, pale pink, irregularly variegated with white round the margins.

ALL who find leisure to be present at floricultural exhibitions in the spring of the year, or to visit the neighbouring nurseries, are aware to what perfection the beautiful greenhouse Azaleas are now reared by the culturist's skill, and how gaudy a show the more specious-coloured kinds make, as well as what a delightful contrast they form to the spotless white of other and similarly prolific sorts. Their graceful character, too, is in such felicitous opposition to some of the more rigid and less branching hardy varieties, that we regard them with much greater pleasure after the comparison. Among the hardy shrubs usually denominated Ghent Azaleas, there are a few, nevertheless, that will not be disparaged by association with the choicest of their greenhouse congeners; for we noticed in several collections this year plants with an admirable improvement in their habit, and so thickly covered with flame-coloured flowers as to look like huge masses of living fire.

What principally distinguishes the tender sorts with regard to habit is the pleasing curvature and partial pendency of their branches, which are, besides, developed completely down to their base, thus hiding the stems, and rendering the outline of the whole more symmetrical. The colour of their blossoms is also more delicate, and generally either pink or purple, or some intermediate tint. From the facility with which their properties are mixed both with the species and varieties that have a real generic affinity to them, and as much so with the members of the genus *Rhododendron*, there are already many hybrids in Britain. Still, in none of these have we yet met with the interesting variegation of hue which marks *A. indica variegata.*

It would seem altogether most plausible to suppose that this charming variety had been raised from a cross-impregnation of one of the pinkish-red flowering sorts with the common white variety. Such, at least, would most likely be the result of an experiment of that kind; though we cannot doubt that it has repeatedly been tried, seeing the general propensity to attempt blending flowers whose colours are in the highest degree diverse. The history of our plant is, however, readily traced to China, from whence it has been more than once imported; and without we set it down as a casual hybridization there by insects, it must be established as a natural variety. Whichever of these hypotheses may be correct, the plant has indisputably few rivals in beauty. In a letter with which we are favoured from Mr. G. Plumbly, gardener to C. J. Dimsdale, Esq., Hatfield, Herts, accompanying some specimes of the blossoms, it is stated that the plant in the collection of that gentleman, although comparatively small, expanded at one time nearly seventy flowers in the beginning of the present year; and when this fact is viewed in connexion with the annexed plate, the superlative splendour of the specimen may be at once imagined.

In the same communication we have some excellent practical remarks as to the impropriety of exposing Azaleas of this class in the autumn months. They are extremely liable, says the writer, to be injured by rains, since they cannot bear much water at that season, and it always prevents them from flowering as they would otherwise do in the following spring. It is therefore recommended to keep them constantly under protection, which becomes further necessary when the more tender varieties, such as that now beneath our notice, grow upon their own roots, and are not grafted on a stronger sort. An excessive glare of light is at all times prejudicial, and those specimens bloom best which are grown in a house that has not a direct south aspect, or is shaded a little from the very hot rays of the sun.

We are informed that cuttings of this variety strike freely if planted in pots under a hand-glass in the autumn, retaining them in this condition till the next spring, when they are potted off singly. Potting the young stock in the autumn is to be deprecated, since they are frequently destroyed by dampness during winter, not being sufficiently settled to fill the pot with roots. Inarching or grafting on stocks of *A. i. phœnicea* is, however, the best method of increase, for this plant evidently requires stouter roots than it naturally possesses.

Mr. Knight, of the King's Road, Chelsea, appears to have distributed the majority of the specimens at present in cultivation, and the variety has flowered several times in that nursery. We have subsequently observed it at Messrs. Young's, Epsom; while the plant which supplied us with the materials for our figure bloomed beautifully at Messrs. Henderson's, Pine-apple Place, in the months of April and May last.

SUCCULENT PLANTS.

Under this title is comprehended a vast assemblage of plants, distributed into a considerable number of genera, exhibiting a great diversity of form, and inhabiting various districts of both the Old and the New World. They derive their name from the large, thick, fleshy, and juicy leaves, branches, or stems, which characterize the species; for though succulence is common to some other vegetable groups, it is usually occasioned by cultivation or climatic circumstances, and is not, as in the case before us, a peculiar and distinguishing natural feature. Nearly all the members of this tribe are remarkable, moreover, for the persistence of their leaves or leaf-like ramifications, and for the greenness and softness of the exterior surface of their stems or substance. Still, the majority of them possess a woody axis, chiefly apparent in their centres, but, in some instances, as in the Epiphyllous kinds of Cacti, extending to the outside, which hardens and contracts into the shape and structure of an ordinary ligneous branch.

As objects of modish interest, and eminently calculated to gratify curiosity, succulent plants rank immediately after Orchidaceæ. The difference in the kind of spell which holds the observer in these two tribes is very strongly marked. In Orchidaceous plants, beyond the striking nature of their habits, which are not much regarded, it is the extraordinary size, loveliness, variegation of hue, outline, conformation, and fragrance of their flowers, which prove so enchanting to their admirers; and the endless multiplicity of all those traits, their singular versatility in the same species, the strange associations, contrasts, and varieties which they sometimes present, with the seeming boundlessness of the stores of novelty yet lying hidden in the recesses and forests of a large division of the globe, but inviting to be opened up and rifled by European research; compose the throng of considerations that has obtained for them the favour to which they have lately been advanced.

Succulents, on the contrary, are, with the exception of a few splendid Cacti, little valued on account of their blossoms, for the production of inflorescence is exceedingly rare with the kinds most prized, and in others it is altogether insignificant. But the particular singularity of their contour, which is sometimes that of a long flattened leaf, occasionally like a huge club, and very frequently approaching to oval or globular, with more or less prominent ribs and parallel furrows,—the number, disposition, length, strength, and colour of their spines or hairs, and the description of the woolly appendages at the base of these,—combine, in conjunction with several other points, to render them the most odd, grotesque, and noticeable of the numberless peculiarities of the vegetable kingdoms. Indeed, Nature seems to have indulged in some of her wildest freaks in their creation, and to have collected together her most irregular vagaries in one grand and preeminent aggregation.

While we thus speak, however, with the licence ofttimes granted to fancy, it must not for a moment be imagined that the subjects of remark are unnatural deviations from a common or even a more simple habitude. The same beautiful adaptation of parts, the same system of vascular distribution, of absorption, accretion, and respiration, which are observable in the other orders of vegetation, display themselves in succulent plants. There is nothing anomalous, nothing superfluous, nothing deficient. And the conclusion is unavoidable that, like myriads of other plants in which unique forms and habits are discernible, this astonishing dissimilitude is intended partly to gratify man's invariable love of multiformity, and chiefly to adapt the different descriptions of vegetable being to the equally various, if not still more dissimilar, changes of clime and soil.

The surprising suitability of the atmospheric and all other conditions in which plants are spontaneously generated to their actual appetences and necessities, as well as to those of the animals and human beings which are naturally located in the same districts, is a pleasing subject of investigation for all who rejoice in the discovery or contemplation of unmistakeable tokens of the Creator's benevolence. Happily, vegetation is enabled to exist in regions where circumstances really inimical are experienced for a time, and is susceptible of wonderful modification according to the media by which it is surrounded; so that it is not positively destroyed by slightly detrimental agents: but it will ever be found most abundant and characteristic in certain localities. As an example of the above class, the adaptation of the structure and growth of succulents to the unusual features of the countries to which they are confined, is among the most interesting.

Dispersed, for the most part, over extensive and arid wastes, or on dry mountain tracts, where scarcely any other sorts of plants could manage to sustain life, they flourish in unimpaired vigour; furnishing the wild beasts of the desert with a refreshing and delicious food, or man with a juicy and luscious fruit, when water and herbage are not to be met with for many miles around: and this, let it be noted, despite the notorious scantiness of their roots, and their consequent inability to imbibe much moisture at any period. Paucity of root is, indeed, one of their leading characters, and some of them will retain their lively verdure with all the appearance of health for several years, though positively destitute of a single fibre.

An examination into the manner in which they contrive to subsist for so long a time without a supply of fluids,—or, what is an analogous though less conspicuous case, how they maintain their luxuriance during the lengthened period of each year, in which they are subjected to the scorching rays of a torrid sun, without any showers of rain to decrease its severity, and in an earth of which sand is the principal constituent,—would carry us too far into the depths of physiological research; yet a trifling scrutiny cannot be otherwise than edifying. Notwithstanding that the fewness of their roots conveys the notion of an inadequate imbibition of moisture, such is their astonishing capacity of retention, that a greater proportion of roots would be absolutely injurious, by causing supersaturation at certain epochs of their growth. It will be evident that we now refer to Cactaceous plants. Were they liberally furnished with spreading roots and fibrous rootlets, the large quantity of fluids which such would necessarily absorb, would render a free circulation and abundant means of escape indispensable: and the possession of these would entail the inevitable destruction of the plants when their fluid resources in the earth failed. It would thus be quite impossible for them to survive a single summer.

One of the most observable reasons why Cactaceæ require few roots, and have a very languid circulation, or barely any flow of fluids at some seasons, is the general absence of foliage. In all the spherical-shaped sorts, and those having solitary erect stems with little or no disposition to branch, and numberless clusters of aculei, botanists inform us that in the rudimentary state of these latter, a quantity of minute leaves can be detected amongst them, which decay and fall before the spines are perceptible. And this is farther demonstrated by the fact that each bundle of spines is a literal bud, with the power of developing itself, when assisted by accident or design, into a stem exactly the counterpart of that which gave it birth. The Epiphyllous species, again, although they might be supposed by the uninitiated to have an abundance of spacious foliage, are really wholly without this organ; the compressed green expansions which they so prominently display being undoubted stems.

From this lack of foliage, such is the ample and admirable provision of Nature, no detriment accrues. The extensive superficies of the stems, copiously covered with pores for evaporation, fully supplies the place of leaves; and, what is more worthy of notice, these pores are almost entirely closed as each year's enlargement of the stem becomes perfect, thus performing their appointed offices while growth is in progress and exhalations are needful, but nearly ceasing their operation throughout the time of torpidity, when the excessive heat would, through their instrumentality, drain the plant of all its fluids. During the hot and arid parts of the year, which are the winters of tropical vegetation, the action of exterior elements on Cacti is suspended in a similar way, though not precisely by the same means, as in Orchidaceæ; the former having their cuticle hardened and its pores shut up, while Orchidaceous plants are deprived of their leaves or the parts on which alone any stomates are situated. It has been a subject of discussion whether succulents have not an infinitely less number of pores than other plants; but Dr. Lindley, who evidently speaks from personal observation, affirms that "in succulent parts they are neither rare nor wholly wanting, as has been constantly asserted, but are, on the contrary, as numerous as on many other parts." If it be thought that this has no immediate reference to the subjects of our article, the reader may be directed to the succeeding page (44) of that gentleman's *Introduction to Botany*, where, in a tabular view of the comparative quantity of stomates on the same extent of surface of thirty-seven different plants, that of several well-known succulents will be seen to exceed many more woody species. Nevertheless, we believe it will be found, as already hinted, that fewer pores reside on the matured portions; and that the specimens cultivated in this country, being constantly supplied with water, and kept in a condition of continual excitement, owing to their having no definitive period of extension, cannot be taken as an index of what they would be in a purely inartificial state.

Another but much more dubious cause of the impunity with which Cactaceæ suffer extreme drought on the burning plains to which they lend a not very widely diffused but permanent verdure, is to be sought in the profusion of their spines, and the recently-broached theory that sharp points of this kind assist greatly in the precipitation of dew and the conduction of electrical fluid. If it be susceptible of proof that the latter, like the nervous fluid in the human body, pervades and strengthens vegetable substances, and imparts not only a capacity of exertion, but endurance,—and if spiny protuberances undoubtedly attract it,—Cactaceæ are certainly provided with numberless facilities for acquiring its influence. On this point we offer no opinion, but wait the accession of greater light.

Those who are anxious to ascertain the more prominent reasons for the security of Cactaceous plants amid agents which would indubitably destroy most classes of vegetation, will have learned sufficient from the foregoing statements fully to account for their tenacity of life. The thickness or toughness of their outer skin, the comparative remoteness of its pores after proper maturation, the scarceness of roots, and the sluggishness of sap which the last two causes produce, respectively contribute to render their existence in a dry situation, with hardly any affluence of water, a matter of neither astonishment nor incertitude.

We have entered upon the foregoing inquiry because nothing is of greater moment in the management of plants than a knowledge of their general constitution and habits. Assuming that the physiology of these plants were unknown, every cultivator would be justified, from the pulpy nature of their stems, in administering immense quantities of water; whereas, with our present information concerning them, we are satisfied that they need less liquid, save for a very short portion of the summer, than the most meagre and slender of ornamental exotics. And we cannot but entertain the conviction that some culturists are yet ignorant of the facts we have recorded; at least, if their practice may be taken as a fair criterion. Watering, in most of the places to which we have access, is conducted unremittingly from the beginning to the end of the year; and while Nature suggests that they should be kept doubly dry in our winters, to compensate for the excessive aridity in which they are so long maintained in their native plains; the silly notion seems to have gained upon us that plants cannot retain their vitality without water, and we sullenly submit to be robbed of flowers, and even to lose the plants altogether, by the encroachments of dampness, that this most unphilosophical propensity may be gratified. We therefore deem over-watering one of the most decided and serious evils in the culture of succulents; and it is an evil, too, the magnitude of which cannot be too forcibly urged; for of all that we can call to mind, there is none so invariably perpetrated, or in the perpetuation of which gardeners are so grossly culpable.

Not to omit any preliminary general intelligence respecting the conditions in which succulents naturally grow, that our subsequent dissertations on their artificial treatment may be better understood and approved, we shall now add a few more particulars, procured from the most authentic quarters. We have said that they are mostly inhabitants of high or rocky tracts, or wide and measureless plains. In either case, they are thoroughly exposed to solar action, never flourishing in the vicinage of trees or shrubs, or beneath the shelter of any plants. A large proportion of them, if we except the Cactaceæ, are indigenous to the Cape of Good Hope, where they abound in open spots, and a sterile sandy soil. Exceedingly few Cactaceous plants are natives of the Old World, they being principally found in the tropical parts of both North and South America, and the West Indies: and such of them as appear to be naturalized in Europe are presumed to be of American origin.

In constructing houses for succulent plants, it will be essential to bear in mind the facts just registered. The most important object is obviously their aspect, which must always be south or south-west. But the benefits which this would afford will not be brought into requisition unless the wooden materials of which the roof is composed are of the lightest and thinnest sort, the glass having as distant joints as practicable, and the stage being elevated as near to the top as the size of the specimens will admit. To effect these ends, the erection should be a rather narrow one, not any higher than to allow room for a walk near the front; and between this walk and the back wall the plants may be arranged in pots on a flat slate stage; one in which there are steps being objectionable, as the drainage from an upper row of specimens might fall upon or otherwise affect the plants directly below them. A smaller shelf of the same material can be erected along the front of the walk, whereon little choice species could be placed. It is of no material consequence what system of heating be adopted, provided it be free from effluvia, equable in its operation, and readily made use of for the expulsion of moisture whenever there is an undue accumulation.

Other houses may doubtless be employed with advantage, particularly when they happen to be already possessed. Still, if one has to be made expressly for the purpose, we would suggest that the hints now thrown out cannot be departed from with propriety. A small and low structure is greatly to be preferred. It is the means of saving fuel, preventing a large collection of damp air, keeping the plants close to the roof, and admitting a more easy inspection; besides occupying less room, and being far more elegant. Its ventilation ought likewise to be thoroughly efficient, and we should attach considerable value to any contrivance for removing the whole of the lights at pleasure during several of the autumnal months.

A collection of succulents must be divided into two great groups, separating them in respect to the temperature they demand. Several future papers will be devoted to the enumeration of the genera composing each, and instructions for their individual cultivation. The article now published is intended as an introduction to the entire series.

FUCHSIA FULGENS.

There are two varieties of this curious plant which are to be found in private collections and public nurseries, differing little from each other, except it be in the higher scarlet tint of the one more recently introduced, and the greater breadth of its tube, which is also somewhat shorter than the first variety that appears to have been brought from Mexico in 1837: see the plate and description in vol. v. p. 221 of this Magazine.

We confess ourselves to be among the number of those who entertain doubts that the plant in question can be correctly deemed a *Fuchsia*. The generic character of *Fuchsia*, as we find it in the Encyclopedia of Plants, page 300, No. 304, under *Octandria Monogynia*, is "Calyx funnel-shaped, coloured, deciduous. *Petals* 4, in the throat of the calyx, alternate with its segments. Nectary an 8-furrowed gland. Stigma capitate. Berry oblong, obtuse, 4-cornered, 4-celled."

Referring to the specific character of *F. fulgens* at page 221, as above, we perceive that one of the essential *generic* points is directly impugned; for we read, "Calyx 5-*lobed*,"—an arrangement which is at variance with the quadrate structure required.

The genus is one of the families of the natural order *Onagraceæ*, under which are grouped plants that "are certainly known by their *inferior* ovary, and by *all the parts* of the flower being four, or a *constant multiple* of that number:" thus there are "four sepals" (calyx-leaves), "four petals, twice four stamens" (Octandrous), "four stigmas, four cells to the ovary; and the fruit, when ripe, bursts into four valves.

"The species characterised by this peculiarity are chiefly herbaceous plants, inhabiting the more temperate parts of the world, and have white, yellow, or red flowers—such, for example, as the great genus of Œnotheras and the Epilobiums, which are common as wild plants. It is only in the *Fuchsia*, which has a succulent fruit, and forms an approach to Myrtaceæ, that a woody structure is met with."

The foregoing is from a very high botanical authority: if, therefore, the number 5 appear in the structure of our plant, it expels it not only from the family of *Fuchsia*, but from the order which comprises all the genera, among which 4 is the essential governing number.

But we will not insist upon this minute point; for in the course of our observations, one single flower only with a 5-parted calyx has been met with. We therefore are rather inclined to disallow the correctness of the above-cited specific character, than to admit that our plant differs from Fuchsia in the structure of its calyx.

But though it herein accord with its supposed congeners, it varies widely from them in its corolla; and here it is that we make our chief stand against received opinions.

If any importance be attached to a *name and type*, then, the first plant upon which was conferred the title of *Fuchsia* in honour of the German botanist *Fuchs*, ought to be assumed as the *type of the genus*. That plant was the beautiful old *F. coccinea*, and it is one which embraces every generic mark that is regarded as essential. Now the corolla of this species consists of four complete and distinct (blue or purple) petals folded into a hollow tube, one enclosing and lapping over the other (a structure which now is botanically styled a convolute estivation). Every plant referred to the genus Fuchsia, subsequently introduced, and which does not present this leading feature, but differs from its type by having its petals open and distinct, instead of being convolutely folded together, ought, we suggest, to be removed from the genus. We are perfectly aware that by so doing we should displace *F. microphylla* and some others; yet if we are to ever attain to a correct arrangement, it would be preferable to construct a new genus, to retaining members which do violence to the leading type. *F. fulgens* sports occasionally into 5 divisions of the calyx; it displays four open and distinct petals, and differs in its physiology from every true *Fuchsia*, and most essentially in the root.

No one can look at it without being struck at the peculiarity of its figure and texture; the position also of its terminal clusters of flowers is entirely different from that of all the true *Fuchsias*, the flowers of the latter being axillary, and never terminal.

As the Natural system of botany is every day gaining ground, it becomes an object of great interest to ascertain, and arrange accordingly, the links which form the strictest affinity, not only in the floral organs, but in the entire physiological structure of the plants. An artificial system might be made to embrace subjects which differ widely in every essential feature; and this is the vice which, to a greater or less extent, is said to degrade the Linnæan classification: but we of the present day ought not to rest contented with the floral organs alone, when we are endeavouring to class naturally—or in other words—according to the affinities indicated by Nature. But this is not the place in which we should attempt to examine the merits or defects of system; another opportunity may be afforded, wherein we shall be able to elucidate the science of botanical arrangement, and to exhibit a simple method of acquiring a practical knowledge of physiological and structural botany, by the aid of dissection, under Ross's single microscope.

We have above endeavoured to exhibit those distinctive points which threaten to remove *fulgens* and some other species from the genus *Fuchsia*; but in strict justice we must not withhold the fact that *hybrids* have been, and still are, produced between *fulgens* and the varieties of *globosa*. There is one species which so evidently partakes of the qualities of both parents, as to leave no shade of doubt concerning the process of impregnation. Thus in *F. Standishii*, the shrubby character of *globosa* prevails, and the flowers assume much of the tint and position of that parent. Still, however, in the foliage it approaches to that of *fulgens*. One little plant was inspected about the 21st June 1840; it was so covered with large axillary blossoms from the lowest lateral to the summit, as to appear a pyramid of bloom. Several other larger plants, procured from the same sources, resembled both parents in figure and foliage, but they did not exhibit bloom.

The process of this impregnation is very simple. *Fulgens* is chosen as the male, its farina being ready and abundant, nearly as soon as the flower opens; whereas *globosa* exhibits its conical projecting stigma several days before the anthers burst and show the few grains of pollen which they contain.

Whenever, therefore, any blossoms of those two plants are open at the same time, *globosa* may be brought into contact with *fulgens*, so that its stigma touch the anthers of the latter and become covered with their farina. When the berries swell and become ripe, the seeds should be sown almost immediately; and from these will be produced new varieties, which will exhibit unequivocal proof of the active energy of the farina. Of the curious phenomena connected with this great physiological fact more may be written hereafter.

It is said that no two plants will hybridize unless the relationship be precise: we therefore allude to the impregnation of *F. globosa* by *fulgens* in order to give every advantage to those who differ from us in our opinion concerning the identity of *fulgens;* but in the mean time we do not cede to any authority, merely as such, and therefore contend that it is the *peculiarity* of the affinity existing between two plants, and not the mere proximity, which governs and operates the process of fertilising impregnation. The pear and the apple, though of one and the same genus, (*Pyrus*,) are mutually inert, and many single *perfect* flowers fail to become fruitful by their own farina unless that be artificially applied; hence we dare not hazard any strong opinion concerning the exact nature or extent of affinities from the results of impregnation, and the simple bald fact that some known *Fuchsias* can be successfully crossed with *fulgens*, cannot, in our judgment, reconcile those manifest discrepancies which seem unerringly to indicate the necessity of removing it from *Fuchsia*, and to make it the first of a new genus. Why not assume the name of the botanist who introduced *fulgens*, and add *Fuchsioides* as the specific title?

FLORICULTURAL NOTICES.

NEW AND RARE PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR AUGUST.

AQUILÈGIA GLAÙCA. An elegant East Indian Columbine, found, however, on elevated parts of the Himalaya mountains, and in Cashmere, so that it is quite hardy in our gardens. It grows from one to two feet in height, has very glaucous leaves, slightly hairy stems, and large solitary yellowish white flowers, which expand in May and June, and are most deliciously scented. It is allied to *A. fragrans*, another new species from the same region, " which has, however, the spurs of the petals hooked inwards, and nothing of the glaucous colour so conspicuous in the foliage of *A. glauca*." Seeds were imported by the East India Company, and probably vegetated in the Horticultural Society's garden. Flourishing in any ordinary soil, it simply requires the treatment of the common columbine, and is increased by seeds or by dividing the plants in early spring. *Bot. Reg.* 46.

Bignònia Tweediàna. For this charming climber, British cultivators are indebted to the Hon. W. F. Strangways, who introduced it from Buenos Ayres in 1838, doubtless through the medium of Mr. Tweedie. Its nearest affinity is *B. æquinoctialis*, "from which it differs in having much narrower leaflets, a distinctly lobed two-lipped calyx, and a more slender flower whose lobes are deeply divided, and narrower at the base than at the apex." The habit is exceedingly graceful, the leaves in pairs, and the blossoms, besides being freely produced, depend in a very attractive manner. They are likewise large, axillary, and solitary, opening considerably at the mouth, and of a pale orange colour. The species only needs the temperature of a greenhouse, thriving in a mixture of loam, heath-soil, and sand, and delighting most to be planted out in a conservatory border, and trained over a great extent of surface. Cuttings or layers root readily, and seeds germinate successfully when they can be procured. *Bot. Reg.* 45.

Brasavòla glaùca. Extremely like a *Cattleya* in the general structure of the pseudo-bulbs and flowers, but evidently belonging to *Brasavola*, on account of the peculiar form of the anther bed and pollen-masses. It has a creeping rhizoma, short thick pseudo-bulbs, not greatly different from those of *Cattleya crispa*, oblong, stiff, and isolated leaves, with the solitary flower rising from their base, enclosed in a capacious brownish spathe. The sepals and petals of the blossoms are pale green, the lip being particularly large and white. The fragrance of the flowers is aromatic and agreeable. Mr. Henchman is stated to have first discovered this plant near Kalapa in Mexico. M. Deschamps also brought a quantity of it to England in 1838; and Mr. Hartweg has since sent it to the Horticultural Society, having collected it near Vera Cruz. Being decidedly the finest species of the genus, it is highly worthy of attention. In its cultivation, the routine followed with most other Mexican orchidaceæ is adopted, and it is either kept in a pot or attached to a block of wood. There appears to be some difficulty in inducing it to flower, on account of a bud which is said to grow at the base of each leaf; but when these are artificially extracted, or the plant is maintained in a dry state while the flower-stem is developing, there is always a profusion of bloom. *Bot. Reg.* 44.

Cáttleya aclàndiæ. One of the prettiest species of this splendid genus, and perfectly new to our collections. Sir Thomas Acland received it at his seat at Killerton, in 1839, it having been discovered and transmitted thither from Brazil, by Lieut. James, of H. M. ship Spey. A specimen flowered in the stove in the month of July of the present year, and it is named in compliment to Lady Acland, by whom a blossom was forwarded to Dr. Lindley. It has short, slender, stem-like pseudo-bulbs, each surmounted by two oblong leaves, from between which the lovely flower is produced. The hue of the sepals and petals is similar to that of *C. guttata*, being a brownish green with deep brown blotches, but those organs are longer and more curved inwards in *C. Aclandiæ*. The labellum is spacious, light purple, and, like that of *C. bicolor*, is distinguished by its base being too narrow and too spreading to fold over the column. When stronger plants are obtained, it is probable that more than one flower will be protruded from each stem, and that they will prove to grow in clusters. *Bot. Reg.* 48.

Cèreus látifrons. In the well-known collection of Messrs. Mackie of Norwich, this noble species flowers in the month of August. The character of its branches, which are broad and flat like those of *Epiphyllum speciosum*, betokens its alliance with the latter genus; but the flowers seem to determine its affinity with *Cereus*. Sir W. J. Hooker says, " This species was, I believe, one of Mr. Hitchin's collection, who received it from the Continent under the name of *Epiphyllum oxypetalum*." It is further remarked that the species is hardly different from the *C. Hookeri* of some authors. The plant is described as tall-growing, unable to support itself, jointed and frequently branched; the branches being broad, with a prominent nerve in the middle, from which a smaller one diverges where the flowers are borne, and a crenulated margin, sometimes tinged with purple. The blossoms arise from the crenatures of the stems, and are of great dimensions, a delicate white, tipped with pink, with yellowish-white stamens, a red style, and a deep yellow rayed stigma. The contrast of these tints is highly pleasing. *Bot. Mag.* 3813.

Gesnèria móllis. This appears to be a strikingly handsome *Gesneria*, though principally so from the brilliant colours of its flowers. It has a sub-shrubby or herbaceous habit, and the stems, as well as the lower side of the foliage, are covered with long, dense, silky hairs. The leaves are opposite, partially oblique, ovately-acuminate, and serrated; while from their axils the peduncles, which are so short as to be almost imperceptible, arise, bearing a number of beautiful blossoms on long hairy pedicels. The flowers are bright orange, spotted with red on the inside, and have a limb of which the segments are nearly equal, but reflexed. Seeds of this plant were collected by Mr. Mackenzie at the foot of St. Pedro, Caraccas, and sent to T. Harris, Esq., of Kingsbury, in February 1839. Plants raised from these by Mr. Beaton have flowered in the present season. " The seeds," says Mr. Beaton, " like all of the genus, are very small, and should be sown in sand previously watered, and then pressed down gently in the wet sand, but not covered. The young plants will rise in a few days, and ought to be kept in a shady place till they are fit to be transplanted." The stems exhibit the creeping character of those of *Trevirana coccinea* at certain stages of their growth, but afterwards attain the height of eighteen inches. *Bot. Mag.* 3815.

Málva purpuràta. Without any remarkable claims to beauty, this is a showy perennial, native of the Cumbre in Chili, and introduced to the garden of the Horticultural Society by Mr. Macrae. Its stems are ascending, and downy, its leaves deeply and numerously lobed, and the blossoms, which appear from the axils of the shoots, but are usually so near their extremities as to form a conspicuous bunch, are light purple, and interesting. In the Glasgow Botanic Garden, it is managed as a greenhouse herbaceous plant; but in the neighbourhood of London, it will endure the open air in a dry situation. Its blooming season is June and July, and it will continue blossoming much later if planted in an exposed border. *Bot. Mag.* 3814.

NEW, RARE, OR INTERESTING PLANTS IN FLOWER IN THE PRINCIPAL SUBURBAN NURSERIES.

Angræcum — ? A very distinct species of *Angræcum* is at present blossoming with Messrs. Loddiges, and is deserving of especial attention for the peculiar character of its leaves, as well as for the great beauty of its numerous pure white flowers. The foliage is at once recognised by its deep green hue, its very irregular termination,—which is not of the kind called emarginate, or even erose, but still more remote from the ordinary structure, broader, and less uniformly jagged,—and by the very prominent reticulations. The latter feature is quite a novelty. Long racemes of flowers, which are not large, but interesting, spring from the stem, and as they stand out boldly from the peduncle on separate pedicels, the whole being slightly drooping, they have a very pretty appearance when the plant is hanging from the top of the house. It is fastened to a log of wood, and thrives with particular vigour.

Cycnòches chlorochìlum. In the stove of Messrs. Henderson, Pine-apple Place, who are making rapid progress towards the formation of a collection of orchidaceæ, and have bloomed several rare species, the above plant is now exhibiting its extraordinary flowers. These rival the blossoms of almost all the plants related to them in size; but their colour is a yellowish green, the lip only being of a whitish yellow. The species is one of those which are indispensable to a group of the tribe; the dimensions and shape of the flowers redeeming it from that neglect which their tints would occasion.

Dendròbium alpéstre. Amongst the minuter sorts of orchidaceous plants, we have not noticed one that has caused us more pleasure than this very delightful little species. The stems and leaves together do not rise higher than two inches, and seldom so much; yet there is a liveliness and healthiness of verdure in them, and they are so charmingly transparent, that no observant eye can be otherwise than interested. The floral racemes ascend slightly from the apex of the stems, after which they become pendent, and bear a comparatively large quantity of blossoms. The figure of these last is very similar to that of the blooms of *D. teretifolium*, and perhaps likewise of *D. cucullatum:* the sepals and petals are white, softly tinged with purple, and the lip is of the same ground, with a purple fringed margin. There is a lightness and grace about every organ that is most fascinating. Messrs. Rollison and Messrs. Loddiges have flowering plants in their possession, which are placed on flattish blocks of wood, and watered freely in the summer months. It grows with the greatest freedom, but must be most carefully preserved from damp during winter.

ERIA DENSIFLÒRA. Like the plant just noticed, this is a small but exceedingly neat species, very different from most of the rest in its dwarf habit, and perhaps superior to them in attraction. Its stem-like pseudo-bulbs are from three to four inches long, pale green and fleshy, and surmounted by a short, dense, pendent raceme of delicate whitish blossoms, the pink and other coloured spottings and marks on which are highly interesting. Plants in the nursery of Messrs. Rollison, Tooting, are now bearing flowers, and are truly elegant objects.

FÙCHSIA DECÚMBENS. The chief distinction of this curious *Fuchsia*, which is certainly rather novel to us, is its depressed creeping character, the stems and branches all inclining towards the earth, and not rising higher than a few inches. In its leaves and flowers it is not far removed from the old *F. coccinea;* though there is less of rankness, and a greater profusion of blossoms, than is common to that species. For planting on rock-work in a situation where it can be triflingly sheltered in winter, nothing can be more appropriate, and it would constitute a fine ornament of such a department. We are told, likewise, that when kept in a pot, and hung from the roof of the greenhouse, its shoots will droop over the sides of the pot, like those of *Russellia juncea*, and flower most abundantly. We met with it in an open border at Messrs. Young's, Epsom, where it is growing at the present season.

GLOXÍNIA RÙBRA. A most splendid species of *Gloxinia*, imported indirectly from South America, and having rich reddish-crimson flowers, with a much darker throat, is blossoming with Messrs. Young of the Epsom nursery. It forms quite a new feature in the genus, and is of great beauty and value. We mention it now, simply to direct attention to it from those who have opportunities of visiting the establishment, and we shall shortly publish an excellent figure which our artist has taken.

GOMPHOLÒBIUM DRUMMÓNDII. One of the products of the large quantity of seeds which Mr. Low of Clapton received from the Swan River Colony last year. It is now developing its flowers in the Clapton nursery, and is named after Mr. Drummond, the collector. The blossoms are of a pale yellowish colour, very like those of *G. tenue;* the habit, however, being purely shrubby, rigid, strong, and the stems capable of supporting themselves, with small and simple leaves. It is inferior to its congeners, and has no particular merit besides its shrubbiness.

HELICHRЍSUM ROBÚSTUM. Among the plants raised from the Swan River seeds above alluded to, this handsome *Helichrysum*, to which we presume no other appellation has been applied, is a conspicuous specimen. It has been raised both in the Clapton and Epsom nurseries, as well, probably, as in other gardens, and its very robust mode of growth, large foliage, and yellowish-white everlasting flowers, of even greater dimensions than those of *H. macranthum*, entitle it to the culturist's favour. Although apparently an annual, the flowers remain in perfection for such a length of time, that it will certainly meet with very general esteem.

Kœmpfèria élegans. An Indian plant, obtained by Messrs. Rollison, Tooting, from Dr. Wallich of the Calcutta Botanic Garden, and now blooming in the stove of the former gentlemen. Its average height is about six inches in this country, the leaves are pleasingly mottled with a kind of grey colour, and the blossoms, which are protruded singly from a sheath at the summit of the scape, are light purple, and very elegant. The species is pretty, though not suitable for a small selection of stove plants.

Lælia álbida. Amidst some newly-imported Mexican Orchidaceæ in the greenhouse of Messrs. Loddiges, we have observed two or three plants of this species blossoming for the last two months. It seems to have a particularly dwarf flower-scape, and white flowers, with a tinge of yellow, and reddish purple streaks in the labellum. Without being comparable to the pink-flowering species, it is worthy of cultivation, and appears likely to succeed in a cold house to which no shading is afforded. In the lip of one of the flowers we observed a large fly, which, on being removed, was found to be quite decomposed, and must have been entrapped between the column and the lip by some elastic power in one or both of these organs.

Lobèlia — ? In several of the metropolitan nurseries we have been watching, for two years or more, a gigantic species of *Lobelia*, with a remarkably strong stem, fully an inch in diameter, and leaves of proportionate size and length arranged densely towards its top, and partially drooping, in the expectation of seeing flowers in some degree equal to the promise it had afforded. It has been kept in the stove, the greenhouse, and the open ground, but failed to flower till, last month, a specimen in the stove of Messrs. Rollison, Tooting, developed a flower-spike and opened its blossoms. These prove to be dull purple, of an insignificant size, and do not properly expand themselves. It is, therefore, nearly worthless as a flowering plant, and can never be grown for aught but its general appearance, which is somewhat ornamental. We understand that Mr. Gardner introduced it from South America.

Miltònia spectábilis. This noble orchidaceous plant is here again brought forward with the view of calling attention to four varieties that have flowered with Messrs. Loddiges. Besides the one we recently represented by a coloured plate, and the peculiarity of which is a shade of purple in the middle of the sepals and petals; those we now notice differ in the tints of the labellum, one being of a pale purple with a broad margin of white, another of a similar ground colour but much more in blotches, and a third of an intense purple, intermingled with a lighter and more delicate hue. The last is a most gorgeous object, and excels all the others.

While thus showing the proneness of Orchidaceæ to vary their colours, we may add that *Stanhopea tigrina*, which has lately bloomed at Messrs. Loddiges', Messrs. Rollison's, and, we believe, Messrs. Henderson's, Pine-apple Place, displays different kinds of markings to its flowers in each specimen. The purer sort, blossoms of which have latterly been unfolded at the Hackney nursery, has a number of comparatively small rich blotches; in others they run into each other irregularly; and a few have all the lower part of the sepals and petals completely obscured with dark purple. Peculiar treatment is generally the cause of these variations; for the same plant will sometimes produce flowers in two successive years that could with difficulty be identified.

Oncídium hastàtum. Of this new species, which flowered a few months ago at Messrs. Loddiges', and is now to be seen in a blooming state in the orchidaceous-house of Messrs. Rollison, it will be sufficient to say, that it is of the pseudo-bulbous division, and has blossoms of a moderate size, in which brown and yellow are most prominent, and the lip of which approaches in shape to that of a halbert. Without being striking, it is deserving of some degree of notice.

Pimèlea nàna. As its specific name indicates, this *Pimelea* is of a dwarf habitude, and does not attain more than nine inches or a foot in height. It is profusely coloured with long hair, its foliage is small and narrow, and the blossoms are borne in terminal clusters. They are pure white, and rather pretty. Mr. Low of Clapton procured seeds from the Swan River Colony, where they were collected by Mr. Drummond, and plants germinated from them are flowering in the Clapton nursery. From the readiness with which it bears flowers so soon after its seeds have vegetated,—several plants having blossomed early in last spring,—it gives evidence of being a very free-blooming species.

OPERATIONS FOR SEPTEMBER.

Proprietors are now almost universally enjoying their country estates, and while in the midst of their gaieties, they are apt to defer attendance to rural duties which cannot so satisfactorily be performed at an after period. We therefore claim a professional privilege of acting the monitor, and instigating them to consult with their gardeners and friends concerning what alterations require effecting in the ensuing winter, what plantations making or thinning, large trees removing, buildings erecting or improving, and many other operations which affect the general character of a domain.

While trees and shrubs are clothed with foliage, and all nature is verdant and smiling, it is far easier to determine the effect of any contemplated improvement than in the dead of the winter, when everything seems exanimate and wears a totally different aspect. It is needless to say how much a landscape takes its tone from the arboreous forms of vegetation, whose individual influence can only be rightly estimated during the time they are decked with their verdurous ornaments. And since this is the case, trees that require retrenching or felling in pleasure-grounds, plantations, and woods, and also in the more extensive groups which are planted in parks, or constitute the extreme boundary of a demesne, should at once be marked, that nothing may be attempted in winter which does not rigidly comport with the beauty of the summer scene. Since there is very little pleasure to be derived from an external garden during the more rigorous part of the season, and the finer months render it productive of the greatest gratification, it is most reasonable to direct the arrangement of its attractions with a view to the attainment of the highest delight at the proper period; consequently, our recommendation carries peculiar fitness and force.

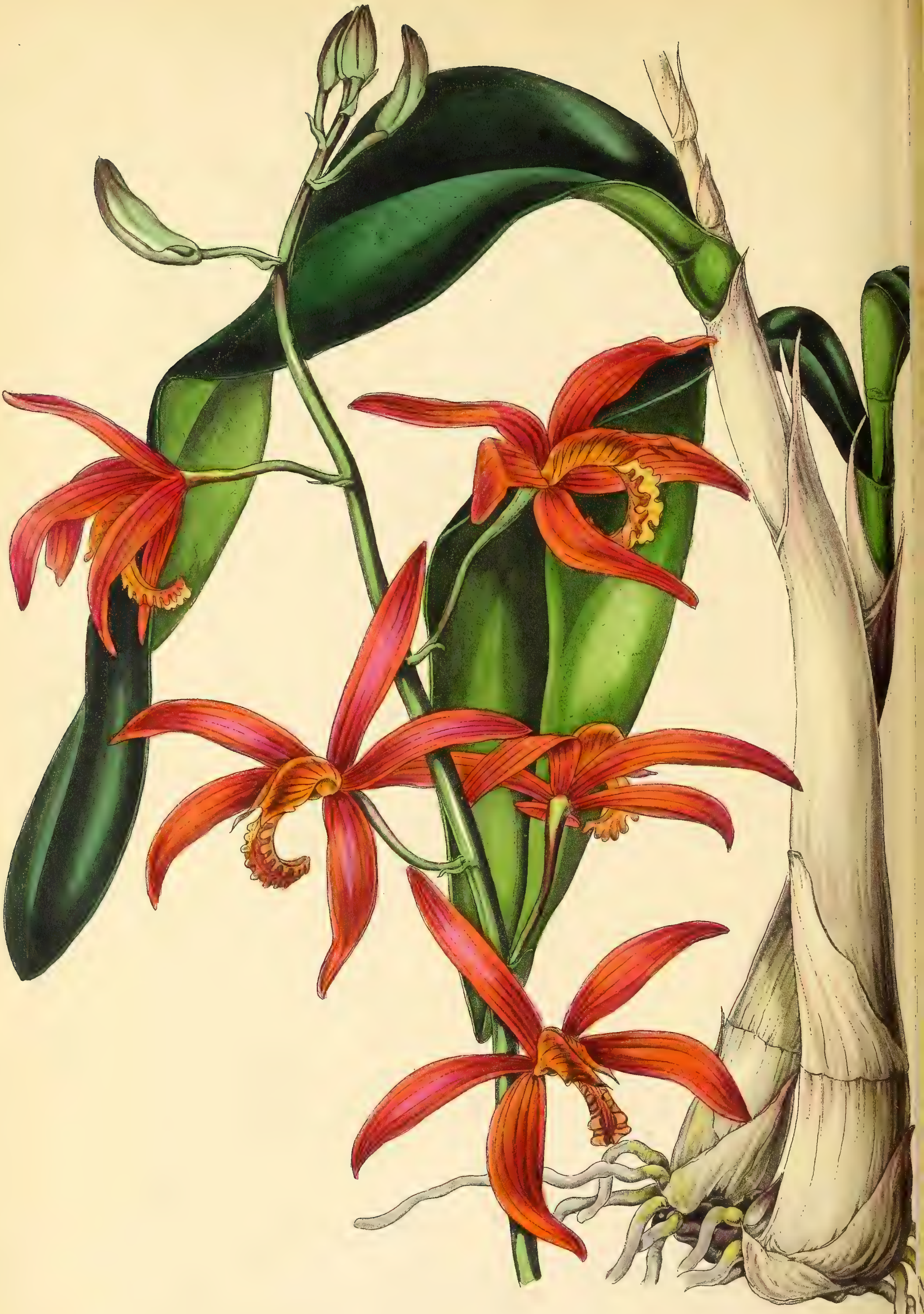
In every department of husbandry, and not less in floriculture than in any other, September is the fittest time for saving and storing seeds. Annuals, biennials, and herbaceous plants that bloom in the open ground, with many species that require the more constantly genial atmosphere of the greenhouse, usually ripen their fruit about the middle of this month, and its preservation must be duly provided for. We believe we have somewhere before intimated the importance of an occasional examination of seed-bearing specimens, for the purpose of gathering the pods singly, as they severally acquire maturity. To the same subject we may here revert, and charge all who wish to keep only a few seeds of each sort, to see that the best and most perfect are not dispersed by accident ere they think of pulling up the entire specimen. It would be superfluous to state that they should be collected on a perfectly dry day; but all may not be so particular to observe that, for the close-headed kinds, three or four successive fine days are requisite thoroughly to divest them of moisture before being plucked; and both very dry materials to pack them in, and a dry situation for their winter reception, are fully as essential.

Verbenas, herbaceous Calceolarias, and some other plants related to them in habit, will, if forthwith potted, and all their flowers picked off, blossom in the greenhouse till very late in the year, and supply a charming feature for two or three of the dull months. Their propagation, together with that of all other species from which it may be desired, can be carried on to any extent according to the customary routine. The plants of this sort that were struck last month, are to be established and hardened with all possible speed. Chrysanthemums, too, should now be looked after, in order to prevent them from towering to too great a height, or otherwise growing in a straggling way. For those who are desirous of obtaining unusually dwarf specimens, we have been informed, by an experienced practitioner, that if, directly the flower-buds show themselves, the tops of the shoots producing them are cut off, at any desired length, and planted in a sandy loam, assisted by a somewhat close moist atmosphere and shade, they will form adequate roots, and flower with equal excellence to the specimens not thus decapitated. We have seen plants prepared after that plan, not more than six inches high, and admirably suited for balconies, drawing-room or boudoir-windows, or front stages in a greenhouse of small dimensions.

Should any of the flower-garden beds chance to fall vacant as the month advances to a close, it will be advisable to fill them with seeds of some of the most beautiful annuals, choosing such as are known to be the hardiest. Clarkias and Collinsias are everywhere in the latitude of London considered hardy, and there are scores besides that only need testing to establish a like character. The advantage of the practice is, that some fine groups will be secured to mix with the early spring bulbs &c., and the novelty—for those transplanted from sheltered parts never flower freely—will add to their attraction.

Plant-houses of every sort that contain anything but some particular kinds of orchidaceæ or stove-shrubs in a newly-rooted and tender condition, must be thrown open as much as practicable in the day to the influence of sun and air. Camellias and some very susceptive stove species, with the majority of orchidaceæ, may be spared full exposure to the solar rays; but air will be beneficial even to these; and all others may be left wholly unsheltered, in order to the thorough induration of their annual growth, and the due formation of flower-buds. It will be injudicious, however, to keep the houses open all night, unless it be those in which the plants make the nearest approximation to hardiness, for it is not cold but warm and dry air that is most effectual in promoting maturation.

It seems to us exceedingly likely that many of the species of orchidaceæ which flourish in elevated localities or high latitudes, will, if their developments are duly perfected, be very extensively benefited by having the lights of the house in which they are grown wholly removed at the present time. All Lælias, most Cattleyas, many Oncidiums, and the members of several other genera, are of this class. Probably their leaves would be rendered of a somewhat yellowish tint by such treatment, and might, indeed, be completely shed if long subjected to it; but this circumstance would only be in accordance with their native habits, and is simply parallel with what we unrepiningly and constantly endure in bulbous plants. There can be little question that the flowers of the plants thus managed would be far more profuse, and superior in size and colour to those of the specimens cultivated in the usual manner. The practice must not be attempted with any specimens that are in a growing or excited state, nor with freshly-imported plants. It is only meant to apply to those which are firmly established, and whose developments have been completed one or two months.



Lælia cinnabarina

LÆLIA CINNABARINA.

(CINNABAR-COLOURED LÆLIA.)

CLASS. GYNANDRIA.

ORDER. MONANDRIA.

NATURAL ORDER. ORCHIDACEÆ.

Generic Character.—*Vide* Vol. iv. p. 73.

Specific Character.—*Plant* an epiphyte. *Pseudo-bulbs* peculiarly long, largest near the bottom, becoming attenuated towards the top, encased in numerous whitish brown scales. *Leaves* usually in twos on the summit of the pseudo-bulb, oblong, acute, coriaceous, purple, and pliable when in a young state; but green, rigid, and wrinkled transversely on the upper surface when matured. *Flowers* borne in a terminal erect stiff spike, enclosed in a sheath, like those of many Cattleyas, prior to the full development of the peduncle. *Petals* and *sepals* almost equal, expansive, oblong, of a brilliant cinnabar hue. *Labellum* with its two lateral segments covering the column, and projecting over the middle one in two conspicuous points; central lobe long, much recurved, finely curled at the margin, the same colour as the petals, with a slight tinge of orange.

The lovely *Lælia* which supplied a subject for the embellishment displayed on the opposite page was, on account of the uncommon structure of its pseudo-bulbs, for some time after its introduction considered a species of *Cattleya;* so nearly do these genera assimilate to each other in all but a few botanical points, now that *L. cinnabarina* has become known. We saw it primarily in the Epsom nursery, where Messrs. Young had the pleasure of first flowering it; and even after the blossoms had been developed, and were shown to professed botanists, but not thoroughly examined by them, the impression was still retained that it belonged to *Cattleya*, till J. Batemen, Esq., upon a closer examination of some flowers unfolded at Knypersley, upon a plant purchased from the above firm, discovered its proper affinity with Lælia.

Allusion being thus made to the original importation of this species into Britain, we are brought at once to a more detailed statement of its history. It was received by Messrs. Young in the spring of 1837 with several other orchidaceæ from Rio Janeiro, and the flowers mentioned as being first expanded in their nursery were observed by us in June of the same year. Only two or three flowers were then opened, neither of which exposed its interior simultaneously with the rest.

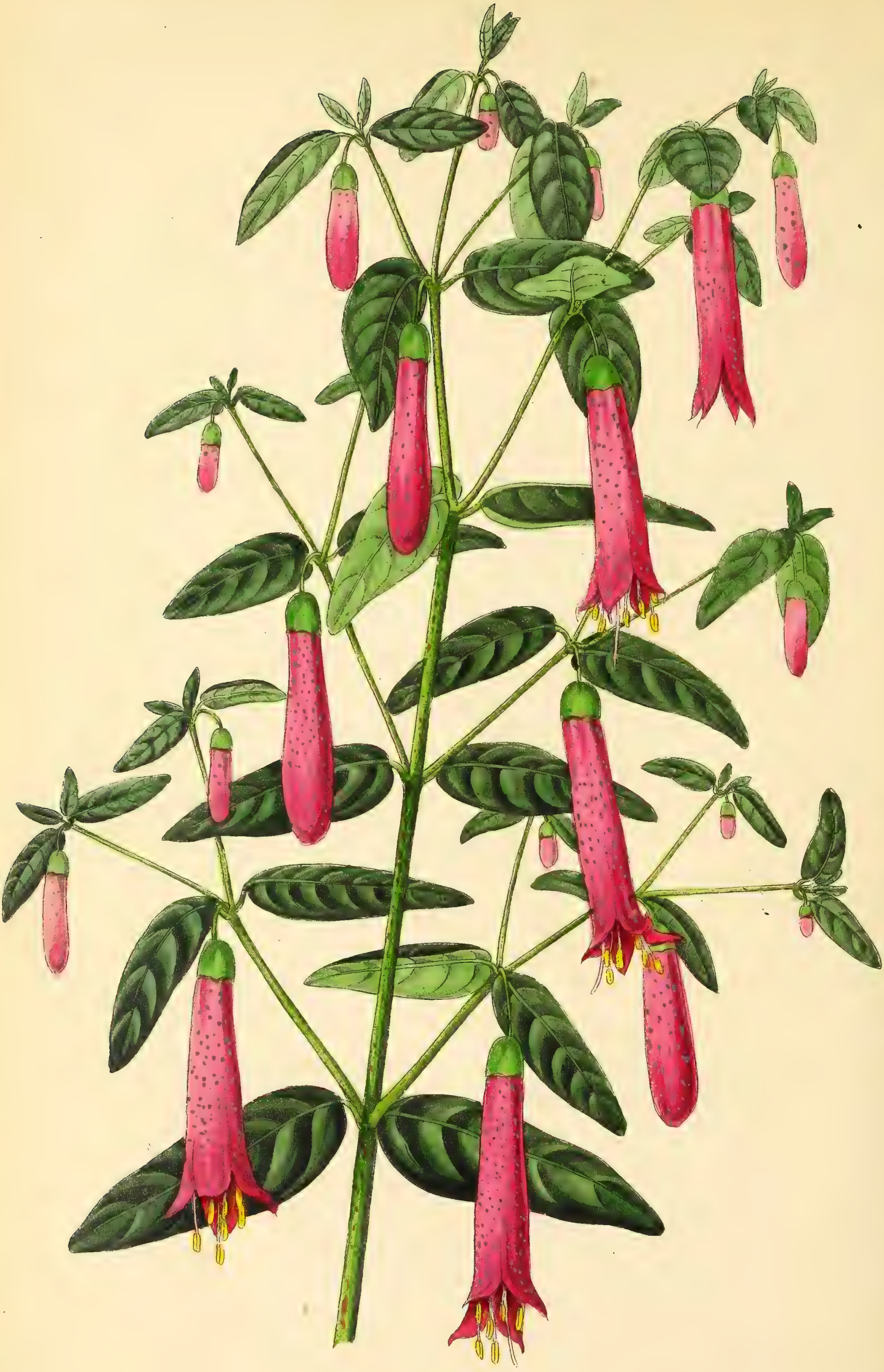
Nevertheless, their brilliant and very peculiar colour rendered it highly attractive, and it was regarded as a valuable novelty. The specimen which flowered in the following year at Mr. Bateman's having been allowed more time to develop itself rigorously, produced a much longer spike of blossoms; which, like those of *L. autumnalis*, were expanded, for the most part, at nearly the same period. It had now assumed a more worthy character, and plants obtained by Messrs. Loddiges from Rio Janeiro, which bloomed in the month of June last, confirmed the opinion which was entertained, and proved that it is a species as deeply interesting and as truly showy as any which had before been grown in our collections.

From the specimen just named, our artist executed the figure now given; and though the hue is of that kind that no artificial composition can really rival it, while that which imitates it the most nearly is extremely liable to fade, a fair idea of it may be gained from the annexed drawing. The flowers of the particular plant in question were, it should be noted, not quite so large as those we have met with on a prior occasion; owing, probably, to its condition with regard both to the short time it has been in the country, and to its only having blossomed once previously.

That the habit of *L. cinnabarina* is not unique in the genus, may be perceived by a species which flowered last month with Mrs. Lawrence, Ealing Park, and which has pseudo-bulbs of a class so decidedly related that the two can hardly be distinguished except by the blooms; those of the new kind being of a pretty pink tint.

Our plant may be cultivated in pots, with a mixture of small pieces of very fibrous heath-soil and potsherds, and a moderate temperature. A good supply of water is necessary while it is growing, after which it should be kept as dry as circumstances will admit. We have no doubt that it would thrive equally well, and might certainly be preserved in greater safety, on a block of wood, aided by a little sphagnum for the protection of its roots. We would here urge the propriety of treating all Lælias in this manner; for pots are not at all suited for the retention of plants, which require such a long period of aridity, in that condition which is so essential to their prosperity.

A few specimens have been formed by Messrs. Young and Messrs. Loddiges, through detaching the pseudo-bulbs, and potting them into separate receptacles, and this is the ordinary means of increase. The species is yet rather scarce.



Corræa longiflora.

CORRÆA LONGIFLÒRA.

(LONG-FLOWERED HYBRID CORRÆA.)

CLASS.
OCTANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
RUTÀCEÆ.

GENERIC CHARACTER.—*Vide* Vol. vii. p. 79.

SPECIFIC CHARACTER.—An hybrid plant, of rather slender habits, with comparatively narrow leaves, and unusually long pale rose-coloured blossoms.

SOME of Mr. Milner's beautiful hybrid Corræas have been already described in this Magazine, and one raised by Mr. Beaton (*C. Harrisii*) has been very faithfully depicted. The present highly interesting kind was obtained by Mr. Milner, of Stockwell, from a cross-impregnation which was exceedingly productive of superior sorts; and, passing into the hands of Mr. Glenny, was purchased of him by Messrs. Lucombe, Pince, & Co., of the Exeter nursery, who in 1839 possessed the entire saleable stock. These last gentlemen kindly had the accompanying drawing prepared for us from a plant which bloomed at their establishment in December 1839, and which is represented to us as being at that time "literally covered with flowers, and promising to continue in great beauty for a month or two longer."

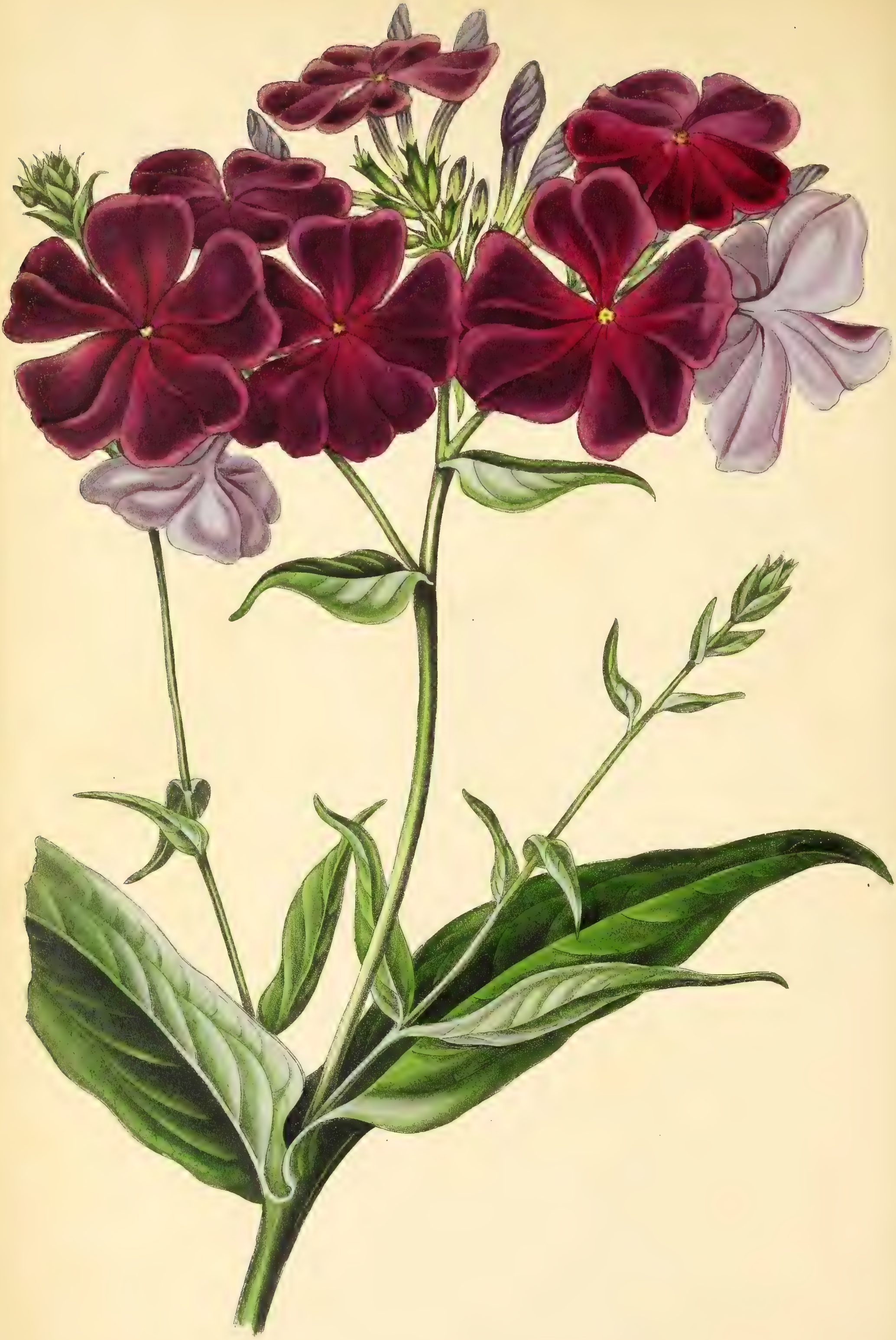
It derives its name from the peculiarly long and somewhat slender blossoms by which it is graced, and this feature constitutes its chief singularity. The habitude is, however, slightly distinctive, as it is less luxuriant and robust than that of most other hybrids, and is far more prolific of flowers, as will be apparent from the specimen exhibited. Being one of the first that was reared, it might be imagined that its characteristics have subsequently been brought out among the quantities that have since emanated from the same source; but in all those which we have witnessed, there is nothing at all approaching *C. longiflora*.

Since our remarks on *C. Harrisii* (p. 79) were placed in the printer's hands, and too late for insertion as an appendix thereto, we have received a note from

Mr. Beaton, in which he strongly recommends, as an encouragement to gardeners in the practice of hybridization, that one-half of the proceeds derived from the sale of a stock of hybrid plants to nurserymen, should, where such a method of disposing of them is pursued, be presented to the individual through whose spirit and skill they were originated. In this suggestion we most cordially concur, and would still further desire that a reasonable proportion of the specimens, or such a number as can be conveniently spared, should be left to the optional distribution or sale of the gardener. No gentleman will, we are sure, acknowledge that he supports his garden with the view of realizing pecuniary aggrandizement, and the retention of two or three of the finer specimens of any superior hybrid will fully recompense the proprietor for the expenditure occasioned in their production.

It was mentioned at the page previously referred to, that *C. Harrisii* is readily propagated by cuttings. The subject now under notice, and a few slightly similar ones, are generally increased by some species of grafting. Till very lately, inarching was the mode employed. More recent experiment has, however, demonstrated the superiority of ordinary grafting, in which the scion is completely severed from its parent when about to be united to the stock. *C. speciosa* or *C. pulchella*, but chiefly the former, will furnish stocks in abundance through the medium of cuttings, and the operation is to be effected very early in the spring, as soon as signs of growth are detected. The plants may be kept in a slight heat, as directed in a succeeding page for other species of exotics, from which they must be gradually liberated when the junction is perfect. It will be prudent to insert the graft as near as possible to the base of the stem, or within three inches, that there may not be so much danger of the specimen being broken at the point of union, and that a due degree of dwarfness and bushiness may be attained.

Messrs. Lucombe, Pince, & Co. inform us that they can now supply any desired quantity of plants, and our subject is likewise to be procured of those higher London nurserymen who make the growth of greenhouse plants of this order a part of their profession.



Phlox Coldryana

PHLÓX COLDRYÀNA.

(MR. COLDRY'S PHLOX.)

CLASS.
PENTANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
POLEMONIÀCEÆ.

GENERIC CHARACTER.—*Vide* vol. ii. p. 221.

SPECIFIC CHARACTER.—*Plant* an herbaceous perennial, about two feet in height. *Stems* erect, moderately strong, triflingly and almost imperceptibly downy, profusely spotted with purplish brown. *Leaves* sessile, ovate-lanceolate, acuminate, inclining to cordate at the base, partially scabrous on the upper side and on the midrib, deep green above, smooth and very pale beneath. *Flowers* particularly large, purplish lilac, with the bright orange stamens conspicuous in their centres.

MANY years ago, this most ornamental *Phlox* was generated in the Bristol nursery by Mr. Coldry, late foreman of that establishment, between two species whose names we have not succeeded in learning; but of which *P. cordata* is pretty evidently one. According to our informant, a botanist residing in that district thought it proper that the plant thus raised should bear the name of the individual to whose instrumentality it owed its existence: and the title of *P. Coldryana* was henceforth adopted in nursery gardens. We now transfer it to our pages, satisfied that any alteration would be an objectionable innovation on established usage; and simply causative of perplexity and annoyance. Moreover, it is but just that if the hybridist is fortunate enough, by the cleverness of his contrivance for the intermixture of two plants with diverse properties, or the appropriateness of his management during the process, to give birth to a kind meriting permanent attention, that his ability and assiduity should be enduringly commemorated, by the association of his name with the product of his ingenuity.

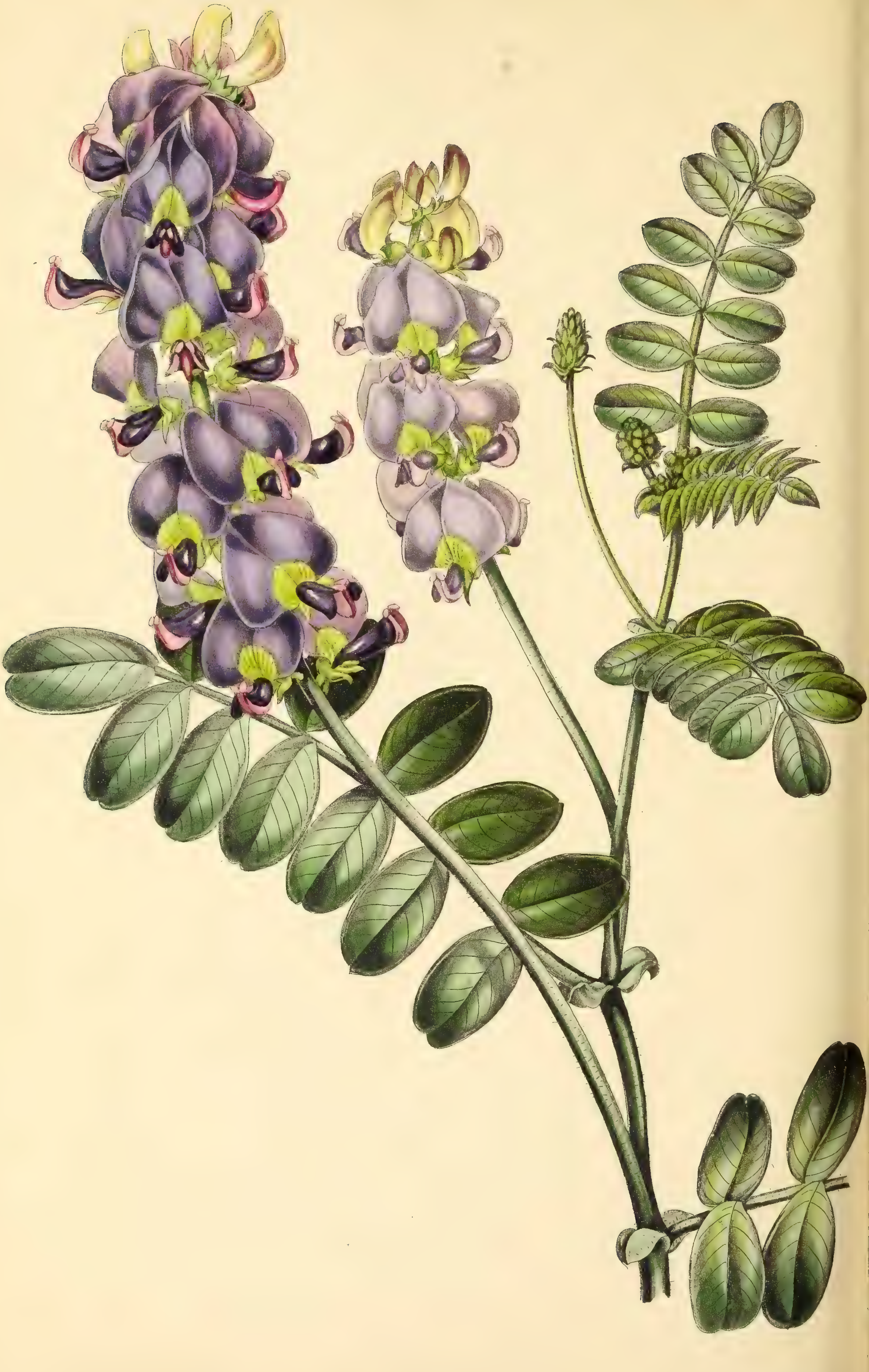
From the Bristol nursery this plant was transported, at a more recent date, to that of Epsom; where, having admired its beauty in the summer of 1839, and sought in vain through the fine collection there existing for a Phlox of an equally showy description, we determined that our readers should have the benefit of the acquaintance with it we had acquired, by having a coloured delineation presented to their inspection. We deem it needful, however, to apprise them that the colouring of our figure is deeper than that of the natural plant, and that the flowers are of a hue which may be best described by saying, that lilac, purple, and pink, seem blended together in order to compose it. No minutely correct copy of it could be furnished on paper.

In conjunction with the well-known species of *Phlox* which adorn our flower-gardens and shrubbery borders, it is a plant of simple culture. Still, it is not every one who experiences the success common in some places, and there are certain particulars to be kept in view by which alone a sickly state can be avoided, and a flourishing one maintained. The most important of these is that the soil of the spot in which the plants are located be a more than usually rich loam, rather retentive of moisture, but not so much so as to cause saturation in winter, or excessive drought during summer, and sufficiently elevated or exposed to render the first of these conditions nearly impossible.

These circumstances duly provided for, no permanent benefit will result from them unless a biennial or triennial shifting is effected; for Phloxes will not luxuriate long together on the same soil, and must be occasionally moved to another bed or situation that has been occupied by a different group of objects. At the season of removal, it is not desirable to divide the specimens into a greater or less number of pieces, as with many herbaceous plants; because the growth of the species is of a nature which is most advantageously exhibited when each plant constitutes a mass one foot or more across.

As *P. Coldryana* does not exceed two feet in height, and sometimes scarcely reaches so much, it is nicely fitted for planting in the larger beds of a flower-garden. For a contrast, *P. omniflora*, which is without exception the most elegant of the white-flowering species, and is barely surpassed by those with more brilliant colours, may be placed in a contiguous bed; and both can be securely returned to the supply-garden after their flowers have withered, if a considerable ball of soil be allowed to attach itself to their roots.

Multiplication is performed by division of the plant at the base. Seeds will not of course reproduce it; but the pollen of this or of *P. Drummondii* applied to the stigma of a white-blooming *Phlox*, would probably occasion another interesting hybrid.



Cyclogyne canescens.

CYCLÒGYNE CANÉSCENS.

(HOARY CYCLOGYNE.)

CLASS.
DIADELPHIA.

ORDER.
DECANDRIA.

NATURAL ORDER.
LEGUMINOSÆ.

Generic Character.—*Calyx* campanulate, partially five-lobed, with unequal segments. *Vexillum* nearly round, emarginate, folded together at the base, naked, and longer than the lower petals. *Wings* short, oblong. *Keel* larger than the wings, very much incurved, obtuse, with the petals connate at the base. *Stamens* distinctly diadelphous. *Anthers* very similar, alternate ones rising above the others. *Ovary* furnished with a short stipule, villous, containing many ovules. *Style* incurved, circinately involute at the apex, bearing the stigma on the interior side, and much bearded. *Legumes* inflated, oblong, one-celled, bare within.

Specific Character.—*Plant* apparently herbaceous or suffruticose, growing about two feet high, covered with white down. *Stems* erect, numerous, rather flexuose, tomentosely villous. *Stipules* foliaceous, broadly semicordate. *Leaves* unequally pinnate; leaflets thirteen to fifteen obovately-oblong, smooth above, clothed beneath with a loose whitish pubescence. *Peduncles* erect, many-flowered, longer than the leaves, terminal. *Flowers* subsessile, scattered or pseudo-verticillate. *Calyxes* and *legumes* very villous in the younger state. *Petals* smooth, purple, with a beautiful blotch of green on the lower part.

It not unfrequently happens, in the earlier cultural history of a plant brought to Britain from foreign countries, that a considerable time passes away ere its correct character of annual, biennial, or perennial, herbaceous, suffruticose, or thoroughly shrubby, is accurately determined. Particular circumstances in which it chances to be placed, or a certain kind of treatment that proves beneficial or otherwise, have such an extraordinary influence in creating the habitude, that the same plant may positively be considered, in different situations, and by different cultivators, to grow in a manner directly dissimilar; and obtains, in consequence, the character which each individual deems the natural one.

By the plant before us, the foregoing assumption is aptly exemplified. From the appearance of the dried specimens, it was thought to be an herbaceous perennial; while from living plants, which, owing to an unfortunate operation that, for the time, destroyed their stems, and greatly endangered their existence, are not now in proper state to judge by, we should decidedly say that it was sub-shrubby. These plants are, however, in so imperfect a condition that the real habit of the species is likely to remain still longer doubtful. Our opinion is based on the fact, that the lower portion of the branches which is yet alive, is of a palpably woody nature, and young shoots are now being emitted from it. And as no herbaceous plant produces lateral ligneous branches from the stems in autumn, it would seem unquestionable that the species is either suffruticose or purely shrubby.

Mr. Low, of the Clapton nursery, procured seeds of *Cyclogyne canescens* from Mr. Drummond, a botanical collector who travelled through the Swan River colony, and gathered them on his route. They reached England at the close of the summer of 1839; and having been germinated immediately, a plant from them grew rapidly in the spring of the present year, and, by the aid of a little forcing, commenced blooming in May last. This stimulation was doubtless in some degree injurious, and because the plant was then growing in a small pot, with a number of suckers continually rising, by which it was constantly increasing in size, it was judged advisable to shift it into a larger pot. On carrying out that design, however, the sudden change, coupled with the excitation it had endured, caused all its branches to wither, and the specimen itself scarcely survived. Since that period it has been kept in the open air, and although it is just beginning to form new shoots, its aspect is very weakly.

Our drawing, which was prepared from the plant herein alluded to, will show that the species is quite an ornamental one. It has several main stems, around which an indefinite quantity of suckers arise, all bearing a terminal spike of blossoms when not more then a foot high. Unless unduly stimulated, or potted while blooming, it is most probably of the easiest culture. A rather rich loam, and an airy place in the greenhouse, are the main things necessary in its treatment. It may, in all likelihood, be advantageously planted in the open ground during summer, where its tendency to bloom freely will render it a welcome acquisition.

The affinity of this plant is obviously with *Galega* and *Astragalus*. It is very noticeable on account of the white down with which its leaves are covered, and the striking profusion of its pretty purple flowers, the bright green blotch in the middle of which adds much to their attraction.

Perhaps, when it is cultivated in a more propitious way, it will ripen its seeds with us, and thus enable us to increase it abundantly. Till then it must be propagated by removing the young suckers very carefully. It is possible, also, that cuttings will strike root if not too freely watered.

PROPAGATION BY GRAFTING.

Of all the traits essentially native to the national mind of Britain, there is none which stands out in bolder relief than the inclination to refine, improve, and extend the inventions and discoveries that are from time to time gaining publicity. Original genius, in a strict sense of the term, is comparatively rare; but its deficiency is atoned for by the almost universal proneness to amplify existing intelligence, and to carry forward its operation to matters which would never have entered the thoughts of those from whom it emanated. It is thus in all the sciences that affect the welfare of our race; the evolution of any new principle therein being gradually but fully brought to bear on correlative arts.

Horticulture is not exempted from the rule here laid down. Wherever an increased knowledge of scientific laws enables its votaries to adopt novel modes of conducting its processes, these are immediately seized upon by the multitudes of minor culturists, and from the numerous phases in which they are viewed, each individual is able to add a little to the general stock of information concerning them, and to push their agency beyond the point which had been attained by the primary promulgators. By the extensive circulation of professional works, and the means they afford for making known the results of any experiments, those undertaken with success by the most assiduous cultivators are given to the world at various periods, and from these a philosophical author gleans the most important facts, and educes additional principles, on which, again, gardeners may proceed in a further course of improvement.

It is in this way mainly, and not by the elicitation of new agents, or the discovery of elementary causes, that the progress of gardening is rendered constant and unfluctuating. The propagation of plants, as originally effected by nature through the dissemination of seeds, was, without question, carried on by man in the same manner during the infancy of human art. An observation of their spontaneous distribution would lead to the practice of sowing them in places where they did not naturally thrive, or where a uniform crop of any particular sort was desired. This, therefore, is decidedly the most simple mode of artificial multiplication.

In tilling the soil around shrubs, it may have happened that their lowermost branches have been partly plunged in the earth so as to leave only their extremities apparent above the surface; and when, in the effectuation of a like duty in the following year, these branches have been found to have extruded roots, a notion would at once be given of the method of increase by layers. At a more advanced era, an accidental disruption of the bark of shoots so layered, and a notice of the circumstance that roots were produced more freely from that point, particularly if it were near a bud, has most likely suggested the incision of layered branches at their nodes, which is now so general.

From the fact that each bud of some layered plants seemed capable of producing both stem and roots when it chanced to lie just beneath the face of the ground, or probably from the development of branches and roots on stakes employed for the support of the more gracile species, the system of propagation by cuttings appears to have had its rise. But by the time this had arrived at some degree of perfection, and certain tribes of plants, wholly the productions of man's skill, were found to be difficult of rapid perpetuation, a sufficient acquaintance with the physiology of vegetables had been reached to admit of the introduction of grafting and inoculation.

Various methods of grafting plants were known and adopted centuries ago. With the ancients, however, and till within a very short period before the present year, the operation was restricted to fruit-trees and one or two particular kinds of ornate shrubs. The process termed inarching may be supposed to be the primitive plan pursued in this kind of propagation, since this augurs a less insight into the economy of vegetation, and would at first seem to require less tact in the operator, and to entail a greater certainty of success. It was with the more tender species of plants, such as Camellias and Pines, that inarching was usually practised up to the last two or three years; but it is, in the present day, quite superseded by grafting.

We come now more directly to the illustration of the position with which we set out. It has been said that grafting was, for an indefinite time, made use of by the orchardist only, and in the multiplication of trees and shrubs, which, on account of their peculiar nature as seedlings or hybrids generated by superior cultivation, could not readily be perpetuated by other means. In this age of progression, it has been shown first, that camellias, rhododendrons, and their allies, can be more easily grafted than inarched, and papers on that subject were inserted at pages 93 and 111 of the last volume of our magazine. And since then, continental nurserymen, as well as those of Britain, have demonstrated the advantage of applying the process to an infinite variety of exotics, and even to the better kinds of dwarf roses which adorn our flower borders.

Before specifying any rules for treatment, it will be well to touch briefly on the *rationale* of grafting, and mention the objects for which it may be usefully employed. Exogenous plants, which are the chief subjects of cultivation in this country that can be increased by that means, are generally known to be composed of distinct layers of wood, one being added yearly to the exterior surface. Of such series, all the inner ones, exclusive of that in the course of formation, constitute what is called the duramen or heart-wood, and are, for all the purposes of the vegetable, virtually dead after they become encased in a new layer. This last layer, which is situated closely under the bark, and is of the same tissue as those it surrounds, but in an immature state, receives the name of alburnum, and is the sole seat of vitality. In endeavouring, therefore, to cause cohesion between two stems or branches, and so to continue the circulation of fluids in the stock uninterruptedly through the scion, it is of the utmost moment that there be as close a contiguity as possible of the vital portion of the one to the analogous part of the other; or that the alburnum of each be in immediate contact.

When it is remembered that the young graft has no resources of its own to supply its need of liquid nourishment, and that it is solely through the living layer of the stock that an inter-communication can be established, and this sustenance furnished, the weight of the above declaration will not be dubious. It may consequently be asserted as a fundamental datum, that the nearer the stock and scion approach each other in size, and the greater amount of their several alburnums is brought together, the more speedy and sure will be the union. We place great stress upon the above condition, because, in the species of plants whose grafting we are about to recommend, it is more easily executed than in any others. That mode of operation, then, which, with the greatest simplicity, and the least liability to have the graft displaced by casualties, brings the largest quantity of living and life-sustaining matter into conjunction, is at once to be chosen.

The ends that can be attained through the instrumentality of grafting are manifold, and hence there may be as many motives to its employment in floriculture. In the first place, there are some plants which will not root with facility from cuttings, and for such, some kind of grafting becomes the best, if not the only, way of propagation. Others, whose roots are meagre, or ill-adapted for enduring the dampness of our soils at particular periods, or whose habits of growth are spare and weakly, seem to seek a more luxuriant stock, and better media for sustentation, to render them more healthy, productive, and beautiful. There is a class, on the contrary, with a greater command of nutriment than is needful, and a habitude directly the converse of those just alluded to, which, when grafted on less exuberant stocks, gain a wonderful degree of dwarfness and proliferousness. Again, not a few exotic shrubs which we now retain in the greenhouse, might, by being grafted on hardy related species, be fitted to decorate our flower borders and more select shrubberies; not through the nature of the scion being made more hardy, but by its thus having a connexion with roots inured to the British climate, less apt to imbibe too much moisture, and less susceptible of injury from cold. The last incentive to the practice of grafting we shall here enumerate, is one that is more suited to gratify a fanciful taste than to conduce to real ornament, though far from being incompatible with the latter. It is the insertion of the scions of several different plants on the same stock, so as to occasion a curious, and in some measure a discordant, assemblage. The agreeableness of the effect produced by this plan will be completely dependent on the similarity of character, as regards the mode and extent of growth of the species associated, leaving the diversity to be secured by the flowers, which ought also to expand almost simultaneously.

In recording the points which distinguish the system of grafting now so current in nurseries, we must confine ourselves to those of leading interest. That which most prominently presents itself is the retention of the plants operated upon in a warm, moist, secluded atmosphere, thus accelerating the result of the process, and dispensing with every external application except the usual ligature of garden matting. About the month of March, or whatever time may be nearest the ordinary development of the species to be united, the young year-old stocks are taken into the propagation house, cut down to within four or six inches of the soil, and the grafts at once affixed either to their apex or side, as may be most convenient, binding the matting rather tightly around them, and taking care that it covers the whole of the wounded parts.

After the plants are thus grafted, the pots containing the stocks are either plunged in, or placed flatly upon, a bark bed in which the fermentation is progressing very moderately, and a set of specimens, varying in number according to their size and that of the covering to be used, is to be surrounded by a hand-glass; over which again, or above the roof of the house, any slight shading can be extended during the day. In a few weeks, if the period be aptly chosen, and the junction skilfully effected, the young scion will be seen rapidly enlarging itself and developing its foliage, when the shading may be partially taken away, the temperature reduced, and the atmosphere of the house admitted.

For propagational purposes, we have latterly met with an improved kind of hand-glass at Messrs. Rollison's, Tooting, which, with the strength, durability, and lightness of iron, unites a degree of cheapness which cannot be realized with that material. The frame of it is composed of zinc. It is made by Messrs. North and Wise, 159, Blackfriars Road, and the cost of one of ordinary dimensions is, we are informed, about seven or eight shillings. But it has two or three peculiar features which augment its value. The first of these is two little doors, fixed on either side of the handle on the top, which, by being constructed so as to remain open or closed, can strictly retain any required volume or kind of air in the interior, or evacuate whatever uncongenial gases or vapours may be enclosed. Another particular is, that the glass of the sloping surface, and that of the upright sides, laps over a piece of zinc for about half an inch, and has a small gutter immediately below it; so that the condensed vapour which settles on the inside of the glass, and which necessarily runs to the points in question, is thus carried to the outside, and there escapes. The last circumstance is of great moment with very delicate plants.

We have said that grafting is frequently now practised without the aid of clay, wax, or any similar substance. Let us be understood to mean that these can be spared when a proper atmosphere is preserved around the plants by artificial means; and that the specimens so propagated must have wax to protect them when subjected to the vicissitudes of a natural climate. Roses, for example, which are multiplied very extensively by grafting in the Epsom nursery,—some in the open air and others in the stove,—will not succeed without wax if they are exposed. The plan is exceedingly judicious with those sorts that are rare, and produce scarcely any or no shoots capable of being layered; because the smallest prunings may be employed, and stocks of comparatively valueless varieties can so easily be procured. Such as are grafted in the stove secure a further advantage, which is, that whereas cuttings taken from them while in the open ground will not of themselves form roots, those from plants that make their growth in a high temperature will usually strike with facility.

To conclude, there are few shrubby plants but may, if desirable, be increased in this way. And the grand essentials to a prosperous issue, are an affinity in texture, age, size, mode of growth, and time of development in the species to be united, with seclusion from common air and excessive moisture, and a supply of an adequate degree of favourably humid heat. For where there is a striking difference in the habitude of plants intended for grafting, although the process may seem to terminate satisfactorily, and the specimen may flourish for many years, there is always a probability that the superior part will suddenly decay, without giving the slightest indication of its approaching destruction, or the cause to which it is due. Most of the admirers of grafted Cacti have been the disconcerted witnesses of *C. truncatus* and others that were attached to stocks of *Pereskia aculeata* withering without any premonitory signs of disease; and the evident reason for such an unexpected and lamentable result is the great disparity between the natures, systems, and structures of the plants brought together.

SUCCULENT PLANTS.

(*Continued from* p. 181.)

At the close of our former article, we threw out some general hints respecting the kind of structure best adapted to the cultivation of succulents. We have no reason here to retract aught that was there advanced, where an extensive collection is to be provided for; but we have since seen a house of a rather different character appropriated to this end, a brief notice of which will most likely be of service to those persons who have only convenience for growing a few species.

The house in question consists of a back brick wall of about six feet high, with a dark roof, perhaps three feet broad, and lights from thence to a small front wall. These lights are on a very trifling slope, not two feet from the perpendicular, and there is a wooden stage directly underneath them, from the bottom to the summit, the frame of which has the same inclination, and the shelves are barely a foot from the glass. There is a path behind the stage to admit a person for watering and other purposes, but the visitor can examine the plants with the greatest readiness by walking along the front of the erection.

Without stopping to enumerate the minuter advantages of this plan, it may be observed that there is a great saving of materials in the construction of the house; that it requires scarcely any artificial heat, as mats can so easily be thrown over the glass; that it allows ingress to a considerable quantity of light, the consequence of which is that we never saw plants in a more beautifully healthy condition than those kept in it; and that the lights can be removed or replaced without any trouble. The attendant disadvantages are exceedingly slight. One of the principal is that the plants cannot be viewed comfortably in bad weather, and this is partly nullified by the walk before mentioned in the interior of the house; while the injury that would accrue to the plants from having the shelves of the stage so nearly above each other, thus subjecting the specimens on one shelf to the droppings of the rejected fluids from those on the next higher shelf, can be obviated by perforating the stage at certain intervals, and placing the hole of every pot just over the cavity in the shelf. With this simple modification, the house here described appears to us to combine, in an eminent degree, all the features which we had supposed worthy of consideration.

Following out the proposed division of succulents into two classes, or such as will require a high temperature, and those which will succeed with a much lower one, the former of these groups may be made to include all the Cactaceæ, of which we shall at present restrict our attention to the dwarfer and more compact forms, leaving the Epiphyllous sorts for subsequent dissertation. It may suffice to say that the species of *Mammillaria*, *Echinocactus*, and *Melocactus*, constitute the types of what we now wish to remark upon, and that all which assimilate to them in shape, will fall beneath the following observations.

We have long held it as a principle in floriculture, that as near a conformity to the dictates of Nature as can be attained, and as comports with the altered circumstances in which plants are placed, considering our knowledge of the effect of those conditions, should ever be sought. This position may be opposed by practical persons, who contend that we cannot produce a climate in all respects like that enjoyed by many tropical plants, and that therefore we should not strive to imitate too closely any single characteristic: but when any very prominent peculiarities are discernible, and we find ourselves capable of creating similar ones without either personal difficulty or danger to our charge; if we then neglect to do so, we abandon the most proper and rational mode of culture, and may anticipate a partial or decided failure.

Applying this assumption to the plants whose treatment is now under discussion, it is pretty generally known that they abound in climates where, for two or three months of the year, a constant rain falls, and both the earth and the atmosphere are filled with moisture, while the temperature is maintained at a high rate. Such is their actual growing season; during which they enlarge themselves with unusual speed, and at its termination relapse into that torpidity which is essential to support them in the arid period which intervenes between that just alluded to, and a parallel one in the ensuing year. In our collections, instead of furnishing them with vigorous excitement for a short time, in accordance with the natural procedure, we keep the atmosphere of the house but very little more moist in the summer than in the winter; the heat of the sun evaporating the fluids administered in the first stage, and the temperature being insufficient in the second to dispel the dampness incident to the season. It therefore happens that specimens imported to this country which can be induced to grow, make their accretions of a diminutive size compared with the natural ones, and always leave a deep indentation between each year's developments, to the manifest disfigurement of the plant.

Without any exaggeration, then, it may be affirmed, that of the plants brought to Britain from their native regions, and there grown in the manner common to our cultivators, barely one can be met with in which the beautiful perfection of outline which they naturally exhibit is thoroughly preserved.

By adopting the system which observation would enjoin, this defect can be at once avoided, and a healthy verdure realized, which is the more admirable from contrast with the sickly yellowish objects that result from improper management. In Germany, France, and other countries on the Continent, where the culture of Cactaceæ is conducted in a most superior way, and the plants present an appearance infinitely preferable to that ordinarily observable in British collections, the example of nature has been scrupulously followed. As the Cacti at Chatsworth have been treated after the same plan for nearly two years with the most gratifying success, it will be well to give some of the details.

About the end of May or the beginning of June, when the time for Cacti to commence growing arrives, which will be easily obvious to a practised eye, one or more hotbeds, according to the extent of the collection, composed of fresh stable manure, are prepared in the frame ground; and after the rank steam has escaped, and the heat is a little moderated, the newly-potted plants are transferred thereto. A temperature of from 90° to 95° Fahrenheit is then kept up, by the application of an exterior coating of new manure when needful, till towards the end of August, at which time the year's increase will be nearly completed. The change in the colour of the spines, and likewise in the whole aspect of the plant, will indicate the period at which growth ceases, and determine the adoption of measures for the gradual subsidence of the heat.

Throughout the era thus defined, besides the vapour which arises from the fermenting manure, the plants are diurnally syringed at three o'clock in the afternoon, and a shading is immediately placed over the frame till the evening. The ostensible object of syringing them so early in the afternoon is to avoid the necessity of covering them with mats at night, as the vapour it occasions is dispersed before night-fall. It is injudicious to water any plants that are in so tender a state too late in the evening, because the evaporation which follows causes a degree of cold that may produce a hurtful check.

On the temperature in the frame falling to 60°, which it should be permitted to do by slow gradations, the plants will be ready for moving back to the succulent house, and a wholly different method of treatment must be entered upon. The epoch of excitation being entirely past, that of dormancy begins. The house should therefore be kept cool, air should be admitted liberally, or the lights at first partially, and ultimately wholly taken off in the day, watering should be suspended, and the Cacti managed almost as if they had no real vitality. It is through this means that their flowering propensities will be elicited, and more will be done towards urging them to bloom in the succeeding summer, by a little prudent exposure, and the avoidance of water for two or three weeks, than could be effected in twice as many years if these points were unheeded.

The possessor of a low greenhouse, who has the shelves arranged near the roof, and can secure the assistance of a hotbed-frame in the summer, would, by the system now displayed, be enabled to cultivate Cacti to much higher perfection than those larger proprietors who have an abundance of stoves, and confine them therein continually in a uniformly moderate temperature.

It has recently become the fashion in one or two rather noted establishments, to regard these kinds of Cacti as needing only the heat usual in a greenhouse ; and in the places where such an opinion has been to a great extent acted upon, the majority of the species have certainly a healthy appearance, and flower in the richest profusion. Herein, however, the failing we have noted in another part of this paper is most strikingly perceptible, and the disagreeable tapering of the apex, or the strange irregularity of bulk which inevitably accrues from the want of a sufficient stimulus, is unavoidably entailed. We cannot consequently concede the propriety of a course so unnatural, or admit that it is deserving of extension, except where no other kind of house is possessed, and the proprietor is ridiculously ambitious to have plants which he has no proper facilities for successfully conserving.

Should it be objected that the employment of dung-frames precludes a delicate individual from watching the plants at that precise period when they are in their utmost vigour, and therefore most interesting, it were easy to show that they might be rendered ornamental enough, and the access to them commensurately ready to admit of their being visited by ladies at any time. Every gardener will best know how to adapt these circumstances to the particular locality, and to make the approach to his succulent frame at least tolerable. A small span-roofed pit, such as is used by market gardeners for forcing strawberries, with a walk down the centre, might even be constructed expressly for this end, and thus spare the necessity for the observer walking on the manure. A pit of this kind is the more desirable, since it would be occupied by the Cacti solely in the summer, and might be made use of for forcing many sorts of low fruits and vegetables all the remaining portion of the year.

With regard, next, to the winter economy of the succulent-house, we cannot do better than state that it should be maintained as nearly as practicable on a par with the greenhouse as far as relates to temperature, and both the plants and the air must be considerably more arid. Several weeks will often elapse without some specimens requiring a drop of water ; and when it is given, it should be doled out with the greatest niggardliness in the morning of a day during which it is likely that a little air may be introduced to carry off the vapour exhaled. Drought is, in fact, the greatest essential to succulents from the month of September to that of May.

Before the Cacti have fairly begun to develop themselves in the spring, and exactly at the time when they may be daily expected to do so, they are to be shifted into a fresh pot; if, upon turning them out of the old one, they are discovered to have filled it with roots, or to be in an unhealthy condition. In the former case, a larger pot must be selected, but a very slight shift will be needed, as it has been already asserted that they have but a scanty supply of roots. Supposing the earth to be loaded with fluids, or unduly compressed together, it will be best to shake it entirely from the roots, and replace it by a new compost in a pot of less dimensions. If the fibres have not reached the outside of the ball of soil, and this last appears loose and properly permeable by liquids, any transference would be unsafe under such circumstances.

For potting succulents, a soil containing one-third sandy loam, one-third broken lime rubbish, one-sixth heath-mould, and the rest silver-sand, will form an excellent medium. Plants that are very healthy may be allowed a little more loam. The necessity for a large proportion of lime-rubbish or reduced sandstone cannot be too strongly enforced. Cacti frequently flourish among the debris of rocks, and in excessively stony or sandy places, and the paucity of their roots renders something of the sort indispensable to prevent moisture from collecting in the soil. It should further be forcibly impressed on the culturist that small pots are for many reasons to be employed exclusively, and in all instances. The common sense of every one will, moreover, apprise them, that with roots so few, so slender, and so brittle, the operation of potting ought to be most tenderly performed.

Imported plants of the class of succulents here treated of are generally believed to be the most unsatisfactory members of a collection. They will at times continue to exhibit the same apparent exterior for three or more years, and will even perfect new additions to their substance, without having a solitary root, and while their base is absolutely rotting. The way to retain such specimens as long as possible is to take care that they rest on pieces of broken pot, and that no part of them comes in contact with soil or anything which can hold moisture. Indeed, it is a good plan with all the dubious specimens to keep nothing but potsherds directly below them; and, unless they are very valuable, to plunge the pots containing them in a gentle bottom heat, which will soon test their capacity for future vegetation.

With the reiterated declaration that the foregoing paper is directed only to the dwarf-growing Cactaceæ, we shall defer all additional directions on the subject till the November number.

FLORICULTURAL NOTICES.

NEW AND RARE PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR SEPTEMBER.

Állium cærùleum. An exceedingly interesting species of *Allium*, with leaves and inflorescence like those of the leek, and beautiful bright blue flowers, the colour of which varies a little in intensity, though it is usually azure. It was "originally found by Pallas in abundance upon the salt plains of Asiatic Russia, near the Irtisch river; afterwards by Ledebour, on the Altai mountains, near the fortress of Buchtarminsk, flowering in May and June." From seeds received by the Horticultural Society, through Dr. Fischer, in 1834, it has been freely germinated. In our gardens it forms a neat bulbous plant, of about eighteen inches in height, perfectly hardy, and requiring a moderately rich soil. Offsets from the old roots will afford a means of propagation, and the seeds may likewise be sown in pans as soon as they are ripe, treating them as other bulbous plants, and not removing the young stock till the second year after sowing. *Bot. Reg.* 51.

Catasètum integérrimum. Mr. Skinner sent this fine species from Guatemala to the late Duke of Bedford at Woburn Abbey, where it appears lately to have produced its flowers. It is very distinct, "having a lip with the mouth considerably contracted, and quite entire." The leaves are particularly large, being more than four inches broad, while the blossoms are likewise of great dimensions, and exhale a rather heavy smell. There are two varieties, differing slightly in the colour of their flowers; the one having greenish sepals and petals, much tinged with purple, and spotted with the same hue, the other being more decidedly green, spotted with reddish-purple, and possessing a smaller labellum, less obtuse at the base; the lips of both are yellow internally, and very richly blotched. *Bot. Mag.* 3823.

Cèreus speciosíssimus; hýbridus. A splendid hybrid production, raised by Mr. Mallison, gardener to Sir Samuel Scott, from seed of *C. speciosissimus* fertilized by *C. flagelliformis*, and partaking largely of the character of each. The stems are much more slender than those of the female parent, and approximate to the rounded form of the male, with, however, fewer angular ribs. The flowers are not so gorgeous as those of *C. speciosissimus*, but larger than those produced by *C. flagelliformis*, and of the same deep crimson colour. It is known in gardens by the name of *C. Mallisoni*, and is a most valuable object. *Bot. Mag.* 3822.

Clématis montàna. Without any claims to actual novelty, since it has been in the country several years, it may be assumed that the merits of this worthy plant are not yet sufficiently appreciated. "According to Dr. Royle, *Clematis gràta* from its fragrance, and *C. montana* from the showy nature of its garlands of numerous white rose-like flowers, are the most desirable of the Himalayan species of this charming genus as ornamental plants. Certainly nothing can well be more beautiful than the latter, of which a figure is given; for in the month of May, or even in April, on the south coast of England, it is one mass of the most brilliant snow-white blossoms, tinged with a delicate pink." Its hardihood is, however, fully established; and, if planted in a rich earth, it grows with such rapidity as speedily to cover an arbour or other rustic seat, for which it is well adapted. Its flowers are, besides, very sweet-scented, and appear earlier than those of any of the other hardy species. Lady Amherst introduced it to England from India, and it has been very generally called *C. odorata*. *Bot. Reg.* 53.

Cynoglòssum longiflòrum. This handsome Hound's-tongue was obtained from seeds presented to the Horticultural Society by the Honourable East India Company, through the medium of Dr. Royle, having been discovered in Cashmere. It is distinguished partly "from the great length of the tube of the corolla, and in part from the elongation of the processes which rise up from the mouth of the corolla, and alternate with the stamens. They are as long as the projecting filaments, curved inwards, and emarginate at the apex, and hollow, which latter circumstance renders it probable that they are mere folds of the corolla, and not abortive stamina." The flowers are conspicuous, bluish-purple externally, and reddish in the centre. The species is a hardy perennial, having stood through last winter in the open border without injury. Its flowering season is from the end of May to the beginning of August, and it is propagated by divisions or seeds, of which the last mode is the best. *Bot. Reg.* 50.

Galeàndra Baùeri. Primarily discovered in French Guiana by Mr. Martin, and subsequently imported by G. Barker, Esq., of Birmingham, whose collector, Mr. Ross, found it at a place "called Kisatipa, ten leagues from Melacatapec," in Mexico. It grows in a dry ravine, where the temperature varies from sixty-nine to seventy-seven degrees, Fahrenheit, by day, and falls at night to fifty-nine degrees. Plants that have reached the Horticultural Society from Mr. Hartweg, bear much duller flowers than Mr. Barker's specimen, but Dr. Lindley is certain of the identity of both with the discovery before mentioned; so that the species inhabits a very extensive range of country. It has something of the appearance of a *Catasetum*, though the pseudo-bulbs are more attenuated towards the summit, and the flower-spike springs from the top out of the midst of the leaves. The hue of the sepals and petals is a greenish brown, and the labellum, which is spacious, is of a deep purple, and very showy. It is said to be excessively scarce, and thrives in the collection of the Horticultural Society, by simply being planted in a well-drained pot of heath-soil, and excited during the growing season, but kept torpid in winter. *Bot. Reg.* 49.

Hòtiea barbàta. Better known in our collections by the appellation of *Spiræa japonica*, and rendered comparatively abundant by the introductions effected through Dr. Siebold from Japan. It would seem, however, that Dr. Wallich was the first discoverer of it in Nepal, and other parts of India, and that the specific name here given, applied by that gentleman on account of the spreading hairs which are often situated at the base of its petioles, has priority of date. Beyond being a very graceful plant, with lively foliage, and large spikes of pretty white flowers, it has the merit of enduring the open air in Britain with complete impunity. Cultivated in pots, it constitutes an elegant ornament of the frame or greenhouse, but specimens transferred to the open border flourish in great luxuriance, and blossom most abundantly. Its average height is about one foot, and its blooming season May and June. *Bot. Mag.* 3821.

MONACHÀNTHUS LONGIFÒLIUS. More properly belonging to the genus *Catasetum*, and only styled *Monachanthus* by Sir W. J. Hooker, for the sake of preserving uniformity in his work. The species of the *Catasetum* class are rarely of much interest, their flowers being generally of a dull colour. The plant under notice is exempted from this position, and is evidently of great beauty. Its pseudo-bulbs are long, oblong, and have a great quantity of dry, brown, sheath-like envelopes, while the leaves are peculiarly narrow and elongated. The flower-scape is from the base of the bulb, pendent, and bearing many rich golden blossoms, the sepals and petals of which are pale purple, and the lip is large, deep orange, slightly mottled, with a delicate pink fringe on each side, and a much darker red one at the extremity. It is readily recognised by its lengthy narrow foliage, and the peculiar showiness of its flowers. "Mr. Schomburgk found this plant in British Guiana, growing on the Ela Palm, *Mauritia flexuosa*." It has been blossomed in the garden of Mr. Brocklehurst, of the Fence, Manchester, and succeeds well under the common treatment. *Bot. Mag.* 3819.

PASSIFLÒRA VERRUCÍFERA. The native country of this desirable new species is not correctly ascertained. It was purchased by T. Harris, Esq., of Kingsbury, from the late Colville's nursery, and is supposed to be an inhabitant of Brazil. "Its affinity is evidently with *P. incarnata* and *edulis*, from both of which it is clearly distinguished by the singular production of green warts upon the margin, not only of the bracts, but of the sepals. Like all its genus, its flowers are very curious and pretty; but its want of rich colours renders it inferior to many species now cultivated." Its habit is vigorous, its leaves three-lobed, deep green, with a tendril at their base, and the flowers are axillary, with whitish petals and a purple crown. The temperature of the greenhouse is proved to be most congenial, and if transplanted into the border of a conservatory, it grows with marked exuberance. Cuttings strike readily. *Bot. Reg.* 52.

RODRIGUÈZIA CRÍSPA. Not far removed from *R. suaveolens*, but larger in all its parts, and having its sepals and petals more curled. Dr. Lindley says, it is "one of the sweetest plants I know; its fragrance resembling Primroses. It is an orchidaceous plant, from the Organ mountains of Brazil, and flowered with Messrs. Loddiges, in October 1839. Its singularly crisped flowers, of a dull sea-green, bordered with yellow, have an uncommon appearance." Whether placed in a pot or affixed to a block of wood, it may be cultivated in an equally satisfactory manner, and is increased by division. *Bot. Reg.* 54.

NEW, RARE, OR INTERESTING PLANTS IN FLOWER IN THE PRINCIPAL SUBURBAN NURSERIES.

Æschynánthus grandiflòrus. A specimen of this superb plant is now exhibiting its blossoms in the nurseries of Messrs. Henderson, Pine-apple Place, and at Messrs. Loddiges', Hackney. That in the former collection is only a year old, and was fixed as a cutting last summer amongst some moss on a block of wood. It has, since that time, completely covered the block, and is producing a large bunch of its brilliant blossoms from the extremities of each of the main shoots. A more showy object can hardly be imagined. At Chatsworth, a fine plant has several hundred flowers at present developed, and constitutes a magnificent display.

Angelònia speciòsa. Three or four new species of *Angelonia* appear to have been introduced by Mr. Gardner, from Brazil, and one has appropriately been selected to bear his name. That now noticed seems, however, to be the most showy. It is of an upright habitude, growing from one foot to eighteen inches high, with narrow hairy leaves, and large flowers, which are of a very bright deep blue, beautifully spotted with purple in the middle. They are situated about half an inch from each other. The species is blooming most abundantly in the collection of Mr. Low, Clapton.

Cycnòches maculàtum. An extremely interesting dwarf species of *Cycnoches*, bearing, in the orchidaceous house of Messrs. Loddiges, a long raceme of its pretty flowers. These are of a somewhat brownish white or stone colour, liberally spotted with dark purplish spots. It is a most valuable acquisition to a collection of Orchidaceæ, and flowers rather profusely.

Dendròbium revolùtum. Brought from Manilla, a few months back, by Mr. Cuming, in a flowering state, and subsequently flowered with Messrs. Loddiges, who possess specimens with their blossoms now expanded. The species is quite novel, of a neat character, with long and moderately stout stems, from one to two feet long, and thickly studded with foliage. The flowers are small, whitish, with one or two bars of orange in the centre, and having the petals very much folded. They are frequently but not numerously produced, and the plant cannot rank with the highly delightful species that principally compose this genus.

Fernandèzia lunífera. This charming little gem is fully as engaging as *F. elegans*, from which it has not many points of difference, the foliage and mode of growth being extremely similar. In the flowers, however, there are two conspicuous processes opposite each other, which, in conjunction, form a very perfect and beautiful crescent. Hence the origin of its specific appellation. Messrs. Loddiges have a plant of it in bloom in their establishment, to which, though by no means a glaring object, it contributes much attraction.

Hedýchium aurantiàcum. A handsome species, allied to *H. angustifolium*, but differing in the hue of its flowers. It is blossoming freely with Messrs. Rollison, Tooting. The average height of its stems is about four feet; its leaves are narrow, pale green, and revolute at the edges; while the blooms, which are elevated on terminal spikes, are of a lively orange tint, and very pleasing. Though wanting the fragrance of *H. coronarium*, it is the most showy of the genus. Plants have been in the country many years, yet it is not cultivated as it deserves in collections of stove-plants.

Impàtiens glandulígera. We met with flowering plants of this stately Balsam in the greenhouse of Messrs. Henderson, Pine-apple Place; and notwithstanding the beauty of the blossoms and their rich purple colour, it grows too large and too straggling to be decidedly ornamental. In open shrubbery borders, backed by tall shrubs, it might perhaps be planted with effect in the summer, as it is only a tender annual; but it cannot with propriety be admitted to the greenhouse, for it occupies far too large a space, and is not sufficiently compact in its habit.

Ìris bícolor. Flowers of this beautiful new *Iris* have been successively opened for the last three months at Messrs. Rollison's, Tooting, where it is treated as a greenhouse species. It produces a great quantity of long narrow foliage, and the flowers are developed from sheaths, on the summit of slender scapes, from eighteen inches to two feet high. The hue of the blossoms is a pale sulphureous yellow, and they have a large deep purple blotch at the bottom of each sepal, with some pretty spots on the petals. It is an ornate plant, and worthy of culture for the elegance of its blossoms, as well as for the liberality of their production.

Lœlia purpuráscens. Not greatly unlike *L. cinnabarina* in appearance, but having shorter pseudo-bulbs, which are not so completely enveloped in sheaths, and exhibit more of their green colour. The flowers, too, have the same narrowness of the sepals and petals, and the attenuated curled description of labellum which was before thought peculiar to the species above named. It is their hue which chiefly distinguishes them, this being a pale pinkish purple. Mr. Butcher, gardener to Mrs. Lawrence of Ealing Park, has succeeded in flowering more than one specimen of this species, which have been shown at the Rooms of the Horticultural Society. It is new and attractive.

Lobèlia tùpa. In the gardens of His Majesty the King of Belgium at Claremont, we observed may plants of this fine *Lobelia* blossoming in great perfection about a week ago, and we have since seen smaller specimens at the Epsom nursery. It was fastened to a rough trellis at the end of one of the ranges of plant-houses, and attains the height of six or eight feet; protruding from the summits of its branches, a spike of large, dark, and very rich red flowers. For the situation we have specified it is well adapted, or for the backs of large borders. It requires something at least higher than itself in its rear, otherwise its tall stems will be too much exposed to view.

Miltonia Clowesii. Neither the lovely *M. spectabile* nor the equally beautiful *M. candida* can at all vie with this most desirable plant in the intensity and brilliance of the colours of its flowers. The form of those of *M. candida* is preserved in them, however, and, for the most part, the disposition of the hues:

but the sepals and petals are altogether darker, and the labellum comprises a variety of tints, from a light blue to the deepest violet. The pseudo-bulbs are yellowish, as in the other species. It has just flowered at Messrs. Loddiges' nursery, and promises to prove one of the most splendid orchidaceæ which have been introduced for some time past.

Oxális geniculàta. A small and very neat species, about two inches high, and bearing a profusion of peculiarly rich orange blossoms. It is a native of the Cape of Good Hope, whence it was imported a few years ago. Specimens are blooming finely in the stove of Mr. Knight, Chelsea, and it is managed as the ordinary stove-bulbs. It would possibly thrive in the greenhouse, where, as well as in the stove, it is interesting as a plant fitted for placing on conspicuous shelves amongst other dwarf exotics.

OPERATIONS FOR OCTOBER.

In specifying the duties which devolve upon the culturist during the month of October, the chief place must be assigned to a preparation of all the objects beneath his superintendence for bearing without detriment the cold and gloomy weather that may be expected directly to ensue. According to the ordinary course of climatic changes, this may ever be considered as the last of the fine months; for though November sometimes opens propitiously, and occasionally continues mild till its close, such conditions cannot be looked for, and even when they exist, they are almost invariably accompanied with a misty and murky state of the atmosphere, which is highly injurious to vegetation at that period.

What we mean, therefore, by preparing plants at the present season for whatever circumstances they may be likely afterwards to be called to undergo, is to induce or foster the requisite degree of torpidity for enabling them to stand against either extreme cold or wet, if they should be casually subjected to it, or to endure a more moderate degree of these, beyond what is really useful. In pursuance of this design, heaths, camellias, or any other plants that have a tendency to form a second growth, or to prolong their previous developments, should be checked as much as possible by exposure, and in the case of the small-wooded kinds their elongations may be removed as they appear. We have observed this disposition to recommence growing in several places lately visited, and the peculiar length of the season sufficiently accounts for it. But the continuance of the usual supplies of water will do much towards augmenting the evil; and this leads us to the direction that all plants, except such as have not reached a state of productiveness, and for which a more protracted stimulus may be desired, ought now to be brought into as dry a condition as is at all compatible with their vitality.

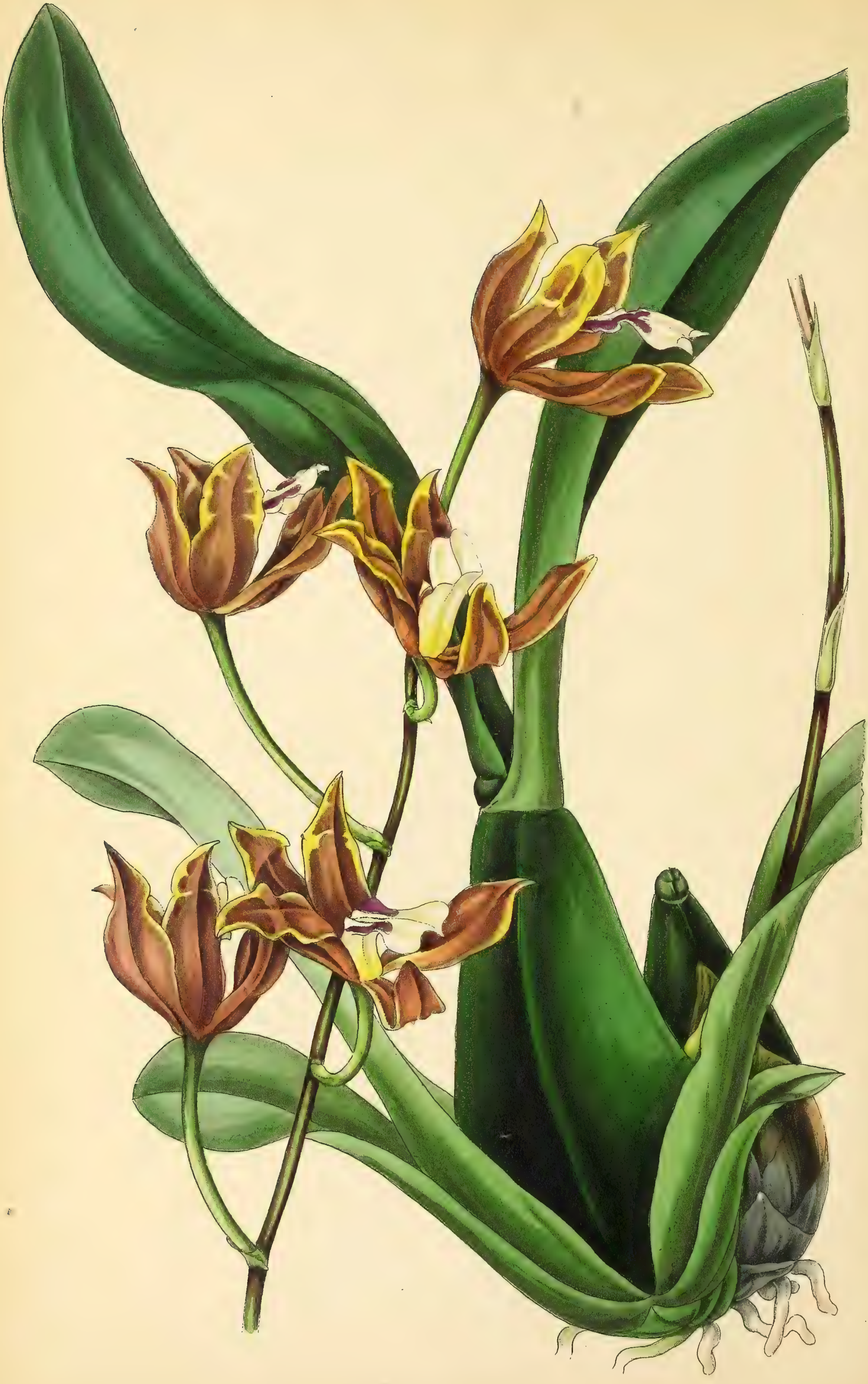
As water must necessarily be administered, to a greater or less extent, throughout the winter, to every specimen cultivated in pots that does not lose its foliage, and assume an almost inanimate aspect, it becomes of the greatest consequence that each individual should, at this time, be strictly examined, in order to determine whether the soil around its roots has acquired that hardness and solidity which will prevent the percolation of fluids, or is so sodden, owing to inadequate drainage, as to retain all the liquid that is applied. Both of these states are particularly dangerous; and the latter is attended with a nearly certain fatality. The plant about whose roots water is thus allowed to accumulate, is not only rendered more than doubly liable to destruction by frost; but, by remaining for a long time turgid and supersaturated, will speedily become the victim of disease.

To provide a remedy for these consequences, the species that are found to be in such a plight must be taken from the pot, their roots thoroughly cleaned, or, if they will bear it, carefully washed, and repotted into the smallest pot which will contain them, with a soil as light and porous as can be readily obtained. It is not difficult to discover, by the appearance of the plant, where the drainage is imperfect; since its leaves have usually a sickly hue, which results from no other cause. The surface of the soil, however, will at once show to what amount the obstruction has proceeded, by its blackness, and the quantity of moss that has been generated. The operation is particularly essential to succulents, and all which have stems, branches, or leaves, of a fleshy texture; because moisture is more prejudicial to plants of that description, seeing that it can more readily permeate them, and they are far likelier to perish from decomposition by dampness.

Little water and an abundance of air are now the great desiderata for plants in houses. Consistently with safety, these instructions can hardly be carried to too extreme a point. It is of course assumed that the atmosphere admitted shall be dry, otherwise one of the above principles will be completely contravened. All the tender species that have been placed out for the summer must be forthwith housed, and care taken to let the water, which may have settled in their pots while exposed to rains, steadily evaporate. It should also be seen that the holes at the bottoms of the pots are not clogged up with soil, or the escape of fluids in any way impeded.

Climbing plants in greenhouses and stoves are to be trimmed towards the latter part of the month, and their branches trained into the narrowest compass, that they may not intercept the light that would reach the plants beneath them. Where they are planted in beds or boxes under the stage, or otherwise shut out from light and air, water must be supplied very cautiously and only in limited quantities.

Seeds should still be gathered from the plants producing them, after the manner noted in the September number. Those of annuals may likewise yet be sown in the open border, and in pots for the greenhouse. It will be advisable to expose daily all the young tender exotics that have been struck for filling the flower-garden beds in the following spring; as the importance of such a proceeding will be strongly apparent on the arrival of cold weather. Dahlias can be lifted and stored at the end of the month. On no account should they be suffered to stay in the ground all the winter. Marvel of Peru, *Tropæolum tuberosum*, and other similar species, should be taken from the soil at the same time. Like the potato, they would degenerate if not annually taken up and dried.



Miltonia Ruſselliana.

MILTÒNIA RUSSELLIÀNA.

(DUKE OF BEDFORD'S MILTONIA.)

CLASS.	ORDER.
GYNANDRIA.	MONANDRIA.

NATURAL ORDER.
ORCHIDÀCEÆ.

GENERIC CHARACTER.—*Vide* vol. vi. p. 241.

SPECIFIC CHARACTER.—*Plant* epiphytal. *Pseudo-bulbs* ovate, ribbed, two-leaved. *Leaves* narrowly lanceolate, spreading, lively green. *Racemes* radical, few-flowered. *Stem* dusky purple. *Sepals* and *petals* similar, ovately-oblong, slightly undulated, of a brownish purple hue, margined and striped with greenish yellow. *Labellum* elliptically wedge-shaped, bent back, beaked, somewhat wavy, scales of the centre truncate; chiefly lilac. *Wings of the column* partially ovate, erose, acute, yellow, with a purple margin on each side of the base.

So very nearly related are some of the genera of Orchidaceæ to each other, and so extremely minute are the characters which separate them, that even Dr. Lindley published an account of the present species under the name of *Oncidium Russellianum*, with a declaration, however, that it had some marks of distinction from the established features of the genus. And when the genus *Miltonia* was founded, the affinity of this plant with *M. candida* became so apparent that it has subsequently been attached to that group.

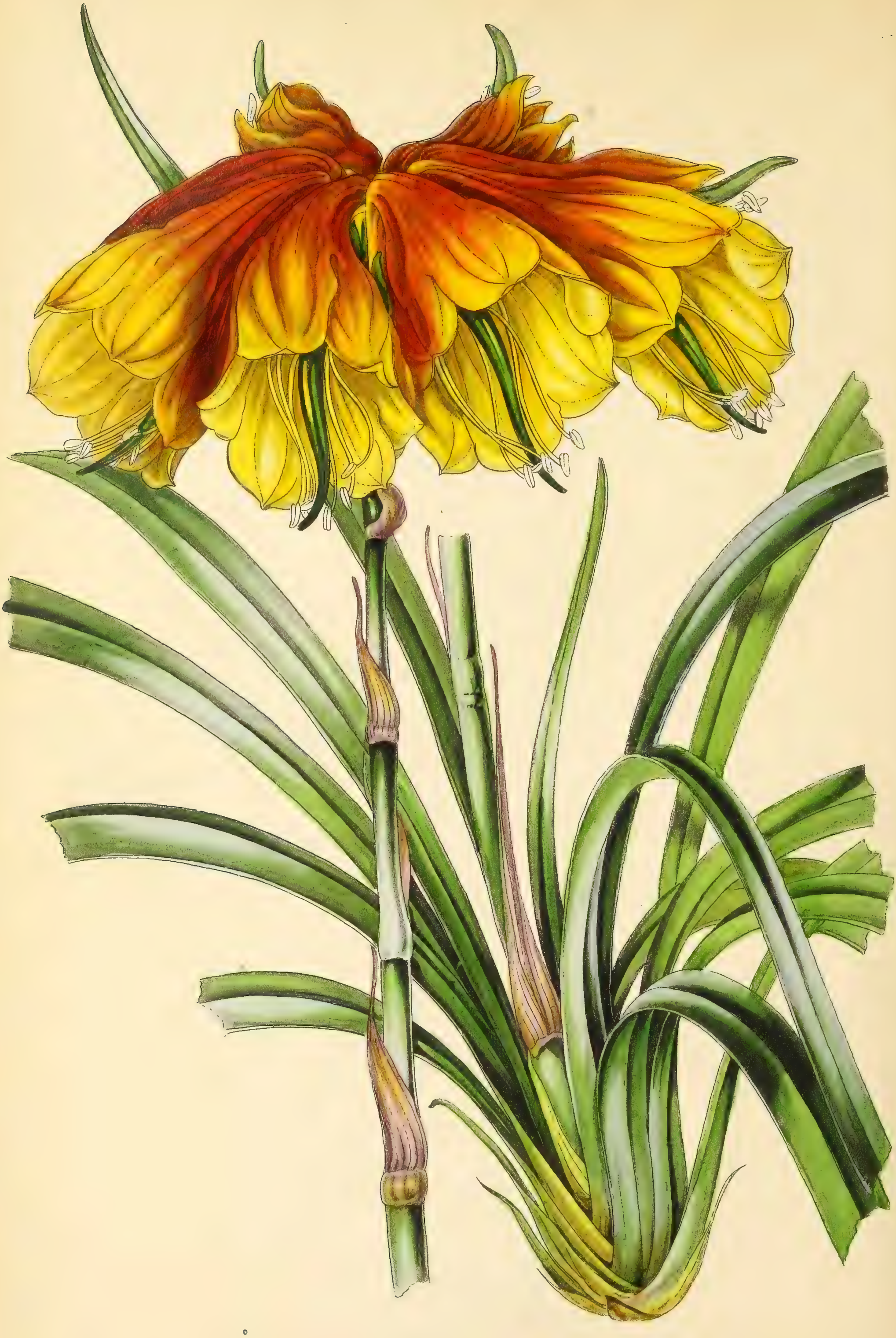
Considering the few species which *Miltonia* yet comprises, and the peculiarly ornamental nature of all their blossoms, perhaps this recent addition will bring very little honour to the genus. It is undoubtedly inferior to all its allies in the size of its flowers, and the gaudiness of their colours; but the difference between it and the beautiful *M. candida* in these respects, is not so striking as might at first be imagined, and the fine purplish lilac of its lip helps to compensate for other defects. There is, moreover, a liveliness in the verdure of its leaves and pseudo-bulbs, and an unmistakeable appearance of vigorous health, which are in some degree wanting to its congeners; and which, on account of the universal love of mankind for those pleasing hues which betoken a flourishing condition, are always more or less to be prized.

The flowers of this interesting species first made their appearance in England at the gardens of His Grace the late Duke of Bedford, Woburn Abbey, whither it was sent by the Hon. Capt. J. Roos, R. N., in 1835; having been obtained from the collection of Mrs. Moke, at Tejuca, near Rio Janeiro. Messrs. Loddiges likewise imported specimens several years ago, and some of these have bloomed in their establishment for the last two or three seasons successively. The plant of which our drawing is a representation blossomed with the latter gentlemen in December 1838, and other specimens are now preparing to develop their flowers.

It is no less observable than encouraging to the superior culturist, that *Miltonia Russelliana* is a species which will abundantly repay him for proper attention, as there are not many Orchidaceæ on which the effects of good treatment are more apparent. Plants in the collection of His Grace the Duke of Devonshire, at Chiswick, have been generally acknowledged to have developed themselves to greater perfection than has been elsewhere attained. Notwithstanding this, the commonest system of management has been adopted. They are potted every spring in shallow pots half filled with a smaller inverted pot and drainage, and the rest made up with small pieces of fibrous heath-soil, blended with potsherds. Their growing season is from the end of the Spring to the beginning of Autumn, at which period they are freely watered at the roots and syringed over the leaves, and a moderately high temperature is sustained.

At the completion of their growth, the heat of the house is reduced and the amount of water lessened, when they will commence protruding their flower-spikes, which are, it will be seen by the drawing, borne from the base of the newly-perfected pseudo-bulb. This last must be fully ripened ere it will produce flowers, and hence the value of withholding moisture after the accretions are all made. Propagation is performed by removing one of the foremost pseudo-bulbs in the usual way.

Dr. Lindley named this species in compliment to the late Duke of Bedford, than whom a more enlightened and zealous patron of horticulture has seldom existed.



Blandfordia grandiflora.

BLANDFÓRDIA GRANDIFLÒRA.

(LARGE-FLOWERED BLANDFORDIA.)

CLASS.	ORDER.
HEXANDRIA.	MONOGYNIA.

NATURAL ORDER.
LILIACEÆ.

GENERIC CHARACTER.—*Corolla* tubular, with a six-lobed mouth, perishing. *Stamens* lying on the tube. *Anthers* affixed to a base in the form of an extinguisher. *Style* subulate. *Stigma* simple. *Capsule* prism-shaped, divisible into three compartments, each of which opens at the interior angle. *Seeds* in two rows, inserted at the edges of the suture; outer coat loose, pubescent.

SPECIFIC CHARACTER.—*Plant* an evergreen herbaceous perennial. *Leaves* rigid, pale green, sword-shaped, nerved on each side, slightly serrated. *Scape* growing to the height of one or two feet, strong, erect, and clothed with distant, brown, taper-pointed scales. *Flowers* spreading out regularly around the summit of the scape, pendulous, pedunculate, with two unequal bracts at their base. *Bracts* opposite, ovate, acuminate, as long as the peduncle, the inner one about half the size of the other. *Perianth* large, inflated, orange-red; limb composed of six segments, of which the outer ones are ovate and obtuse, the inner broader and retuse.

FEW topics connected with floriculture have elicited more of our regret than the untimely neglect to which handsome and highly ornate old plants are sometimes subjected. The thirst for incessant variety so thoroughly pervades all classes of the British community, that barely a single cultivator can be reasonably exempted from a participation in this childish failing. And even the most enthusiastic, who might be supposed to possess a more than ordinary regard for the true interests of the art, are precisely the individuals who seem most completely imbued with a passion for novelty.

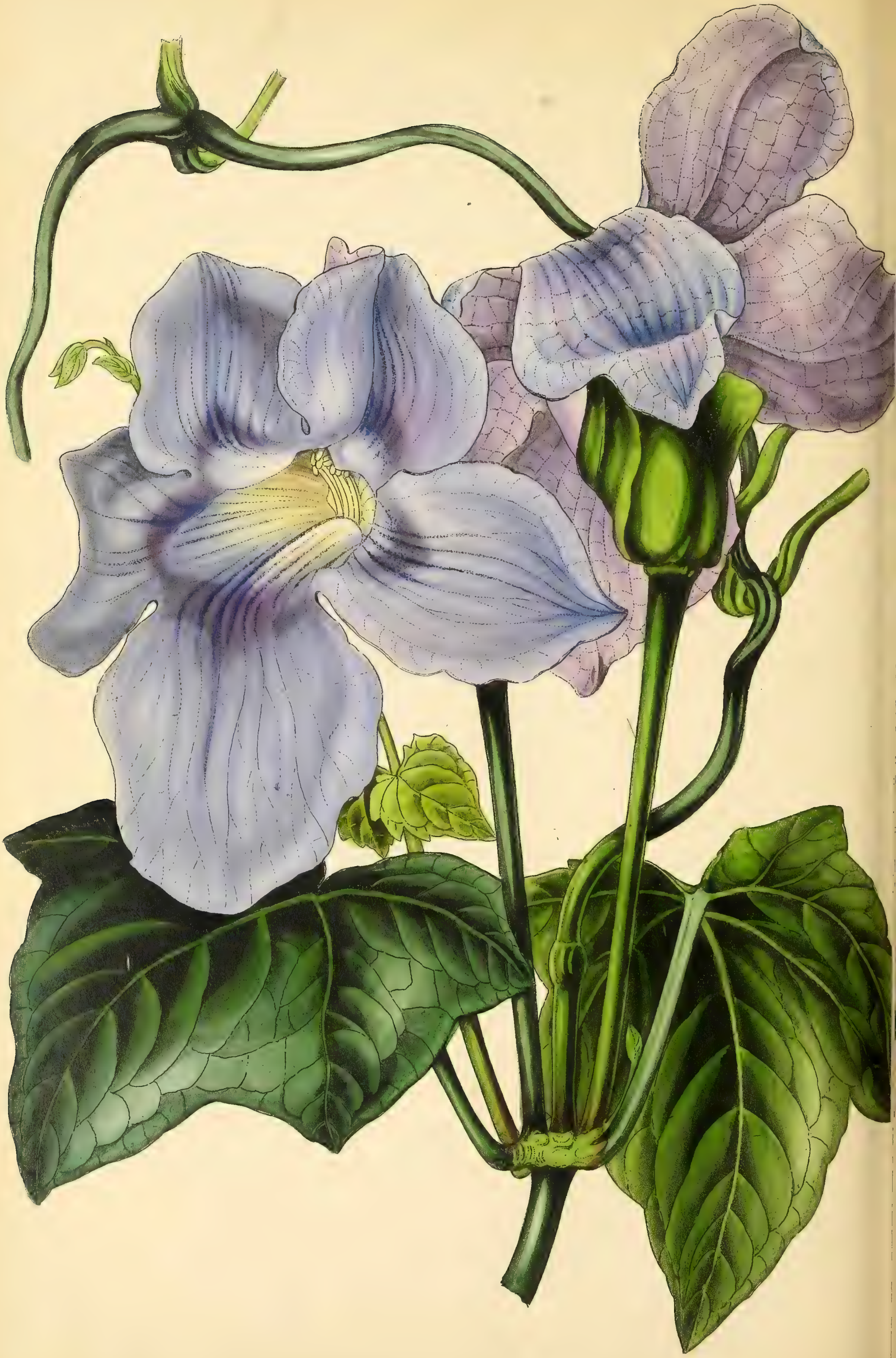
No better instance can be furnished of the extent to which this fault is now carried, than the extreme scarcity of the very showy plant here figured. Until we encountered a flowering specimen in the greenhouse of Messrs. Loddiges about the middle of last May, we never remember to have met with it in a blooming state. With the plant just noticed, we were so particularly gratified, that the drawing now presented was executed immediately. And we are satisfied that our readers will, with us, consider it a most desirable species for the greenhouse, especially when we state that, unlike the bulbous plants with which it is naturally associated, it retains its blooms in all their beauty for several weeks.

Its chief merits, besides that above mentioned, are that it is a tuberous-rooted, not a bulbous perennial, in consequence of which, its habit is altogether dissimilar to that of bulbs; that its foliage is preserved throughout the winter; that the inflorescence is borne on a strong rigid flower-stalk, just short and stout enough to support itself; and that it produces blossoms which are copious, elegantly disposed, large, and of very bright as well as variously-shaded tints.

The original species (*B. nobilis*) on which the genus *Blandfordia* was originally founded, in honour of the Marquis of Blandford, by Sir J. E. Smith, is not very manifestly distinct from *B. grandiflora*, except in its much larger flowers, in the length of the bracts being equal to that of the peduncles during the expansion of the inflorescence, (although the peduncles are considerably elongated after the flowers have withered,) and in the numerous small serratures along the margins of the leaves. The latter point, which would seem to have been overlooked by Mr. Brown in his description of the species, has been particularly observed by Dr. Lindley who prefers it as a specifically representative feature.

With reference to the direct origin of the species, nothing is correctly known. Dr. Lindley says, that it was growing, many years ago, in Mr. Colville's nursery, of Chelsea; and that it had been raised from seeds collected in some part of New Holland by Mr. John Richardson. That New Holland is really its native country there can be little question; and it was most probably introduced to our greenhouses about the year 1812.

From the evergreen character of its leaves, it may easily be augured that the treatment bestowed on Cape bulbs would not be appropriate for this plant. Owing to the necessity for watering the soil in which it grows all the winter, it becomes important that a little more heath-mould than is afforded to bulbs should be employed, and that it be kept perpetually in a light airy greenhouse, with a dry winter atmosphere, but not too dry at the roots. It is said to thrive most luxuriantly when planted in the border of a conservatory, but of this method of treatment we cannot speak personally, not having seen it practised. Grown in a pot of moderate dimensions, it flowers profusely at Messrs. Loddiges, and is increased by division of the roots.



Thunbergia grandiflora.

THUNBÉRGIA GRANDIFLÒRA.

(LARGE-FLOWERED THUNBERGIA.)

CLASS.
DIDYNAMIA.

ORDER.
ANGIOSPERMIA.

NATURAL ORDER.
ACANTHÀCEÆ.

Generic Character.—*Vide* vol. iii. p. 28.

Specific Character.—*Plant* sub-shrubby, climbing, perennial. *Stems* woody, with the young shoots a little hairy, and slightly quadrangular. *Leaves* opposite, petiolate, spreading, angularly cordate, with five or seven nerves, somewhat roughened on both sides by small, white hairs. *Petioles* erect, nearly as long as the leaves, smaller towards the base. *Peduncles* axillary, one-flowered. *Calyx* two-valved, about as long as the throat of the corolla, with no interior segments. *Corolla* campanulate, very large, pale blue; *limb* five-parted, lobes nearly round, two upper ones erect, three lower spreading.

Like the fine species of *Blandfordia* depicted in a previous page of this Number, the noble *Thunbergia*, to which attention is now more immediately invited, has had to sustain for a time the contumely of the fanciful, to make room for numbers of the far less worthy acquisitions of modern collectors. But whether it be because the favourite of one day, though discarded the next, is, if possessing any decided claims to regard, almost certain to be reinstalled at some subsequent period, or whether, as we would fain believe, the public taste is becoming less fickle, and more in accordance with staid principles; we are pleased to see the subject of these strictures again making its way to popular esteem, and attaining that place in a collection of stove plants which it so well deserves.

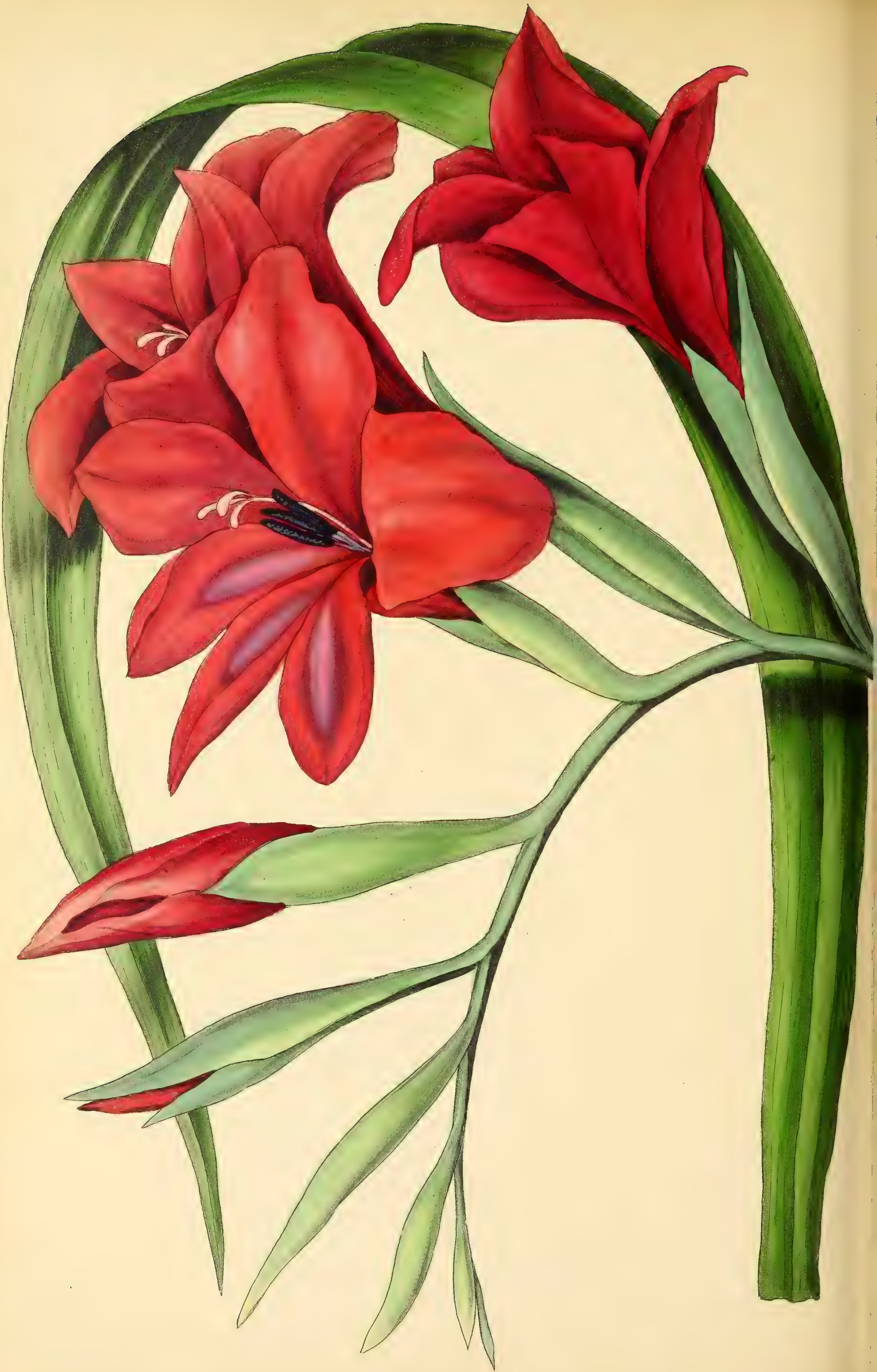
Within the last five years we can remember observing this plant, with a most miserable aspect, in nursery and other establishments, cramped into a small pot, almost smothered by larger specimens, and exclaimed against as a species which hardly ever blossomed; the truth of the matter being that it never had any opportunity of making other than the most slender shoots, which, not being able to arrive at maturity from the circumstances amidst which they were formed, did not, of course, develop any flowers. Such, indeed, is very generally the case with stove-plants that are called shy bloomers; the cultivator's bad treatment and not the constitution of the plant, being the cause of the defect. Thus, it is always found, when the specimens decried are placed in those conditions which are evidently essential to their proliferousness, they commence flowering most profusely, and continue to do the same while a similar system of management lasts.

Having examined, with some care, plants of *T. grandiflora* which bloom abundantly, and others on which a single blossom is rarely to be witnessed, it is obvious to us that the two states are brought about solely by attention or inattention to some very trifling particulars. First, it should be potted in a compost with some pretensions to be called rich, but not of an extremely nutritive description. Two parts of maiden loam, and the remainder of heath-soil, leaf-mould, and sand, will, if mixed, constitute an excellent material. Next, the pot to which it is transferred must be exactly of the size suited to its wants, and neither so large as to leave more than three quarters of an inch between the roots and its edge, nor so small as to check the extension of the rootlets, unless the specimen be too exuberant. Lastly, each plant ought to have an open space of at least half a foot on all sides of it, that the influence of the external aerial agents may be duly received, and that it may not relapse into a weakly state, with long, sickly branches, bare towards the bottom.

The best mode of training for the attainment of these ends is to a small round trellis of either wood or wire, around which the shoots can be fastened in such a manner as not to grow higher than four or five feet from the stage. In the summer months this species needs watering with great liberality, and syringing rather forcibly three or four times in a week. Throughout the winter, however, it is to be kept much drier, and suffered to stand on a wooden or stone surface.

Our drawing of this splendid plant was made in the nursery of Messrs. Henderson, Pine-Apple Place, whose recent culture of stove plants, and the spirited manner in which they have constructed houses for their reception, are much to be commended. It is an East Indian species, described by Dr. Roxburgh as growing "among bushes in wild uncultivated spots near Calcutta, where it flowers in the rainy season." With us it blooms freely through several of the autumnal months.

Cuttings of the young wood, taken off in spring, and placed in sandy loam, plunging the pots in heating bark or manure, and protecting the whole by a hand-glass, will strike root with tolerable freedom.



Gladiolus insignis.

GLADIÒLUS INSÍGNIS.

(REMARKABLE CORN-FLAG.)

CLASS.	ORDER.
TRIANDRIA.	MONOGYNIA.

NATURAL ORDER.

IRIDÀCEÆ.

Generic Character.—*Vide* vol. ii. p. 197.

Specific Character.—A handsome hybrid, with very long narrow leaves, and apparently partially drooping flower-stalks, on which the blossoms are borne chiefly on the upper side. *Flowers* of a rich reddish crimson hue, having a dash of bluish purple in the centre of the lower segments of the perianth.

We have to thank Messrs. Lucombe, Pince, and Co., of the Exeter nursery, for our figure of this most superb *Gladiolus*, which was taken from a plant that bloomed in their establishment in July 1839. Although we are not favoured with any account of its parents, or of the place in which it was raised, we have adopted the name under which it was sent, and by which it was purchased, at the sale of the late Mr. Colville's plants, Chelsea, among other Gladioli, because it is significantly expressive of its remarkably attractive flowers, and of their singularly brilliant colours.

If the facilities we possess for ascertaining the degree of admiration in which any tribe is held entitle us to express an opinion respecting that bestowed on the genus *Gladiolus;* we should say that, proportionately with their extremely engaging character, and the vivid tints of their blooms, the species are by no means treated with sufficient respect. This disregard of so valuable a group of plants is plainly to be accounted for by the fact that Gladioli are usually classed with Cape bulbs, and their flowers are consequently deemed too fugitive to render them worthy of much regard. A supposition more at variance with the truth cannot well be conceived. Although their roots are popularly called bulbous, they are what botanists term corms; and instead of the blossoms fading after they have been unfolded for one or two days, there is invariably on strong specimens of the best kinds a display of them during two or three of the summer months.

The great fault, however, in the cultivation of Gladioli, and that which renders their character at all dubious, has, we believe, been before noted in this magazine, and may here be adverted to. It is their confinement in pots throughout the entire year, when they should be planted in the open border in the finer part of it. On this point, and with especial regard to G. *insignis*, Messrs. Lucombe, Pince, and Co. write as follows:—"It is one of the very finest hybrids that we are acquainted with. It flowers profusely when planted out in a bed composed of two-thirds sandy heath-soil, and the rest rich loam. We would advise the potting of the bulbs early in November, keeping them in a cold frame during winter, and planting them out for flowering in May. Treated thus, *Gladiolus insignis* is one of the greatest ornaments of the flower-garden in the months of June, July, and August."

To these comprehensive remarks, it would be superfluous to append further directions. Still we may be permitted to observe, that where the fashion of filling the beds of the flower-garden with choice exotic plants is followed, it will be a rather new and doubtless a most interesting feature to introduce a clump of Gladioli, which, from the treatment they demand, and their well-known habit of withering after the flowers have all been opened, are exceedingly well fitted for such an object. Should the weather which ensues directly upon their blooming period be very damp, and unfavourable for the maturation of their corms, they may, with great propriety, be shifted into pots, which will accelerate the decay of their leaves and stalks, and also leave the bed they occupied vacant for some other later flowering plant.

If a compartment in the flower-garden cannot conveniently be set apart for these plants, the best situation for them is in the border fronting a greenhouse, conservatory, or any other structure with an aspect inclining to south, particularly if that border should happen to be a rather narrow one. In any case the soil of the bed or border in which they are grown should be rather elevated, as they cannot endure much moisture in the autumn. They propagate themselves by offsets, which have only to be detached and planted separately at the time of their annual removal

SUCCULENT PLANTS.

(*Continued from* p. 209.)

FROM the culture of the spherical-headed kinds of Cactaceæ, we shall now turn to that of the Epiphyllous sorts. These may be defined as having, for the most part, stems which are much elongated, and more or less flattened at the sides, so as to approach, in some instances, very nearly to the form of leaves. They constitute a portion of the genera *Cereus*, *Cactus*, *Epiphyllum*, *Rhipsalis*, *Opuntia*, *Stapelia*, and one or more modern divisions, of a similar character.

Several of the *Epiphylla* differ essentially from the globular species of Cactaceæ in a very important part of their habitude; and this difference renders a somewhat peculiar treatment desirable. We refer to their epiphytal nature; many of them being found on the branches of trees, along with orchidaceous plants. The old *Epiphyllum speciosum* furnishes a good example of the class, as we have frequently observed specimens adhering to logs of wood on which Orchidaceæ have been imported, and seeming to thrive as well in such positions as their more decidedly epiphytal neighbours.

On the point just broached, however, experience advances to the aid of the culturist, and prevents him from too rigidly following a system of management which is but partially pursued by Nature. One principal aim of the cultivator of exotics must always be to preserve his plants in the most continuously verdurous condition compatible with the free production of flowers. And it is often to be noticed, that while the precise degree of the elements naturally afforded to vegetation renders it capable of fulfilling all the ends to which it is destined, a more artificial process of culture will make it additionally pleasing to the eye for a much longer period. It is thus with Orchidaceæ; particular species of which are generally known to grow in a superior manner in this country to that common to them in their native climes. And the group of Cactaceæ at present under remark is likewise susceptible of great improvement, by the modified application of proper auxiliaries.

Instead, therefore, of fastening any of the Epiphylla to blocks of wood in our stoves, and affording them only the scanty means of obtaining moisture which some Orchidaceæ receive, we act wisely by growing them in a more extensive medium, and placing around their roots a more retentive material; for by this method we procure strong and luxuriant specimens, whose vigour alone is exceedingly interesting, even in the absence of blossoms. But here another extreme presents itself, which the less reflective find the greatest difficulty in avoiding. In the natural state of all epiphytes, they are subjected, during a considerable part of the year, to excessive drought, by which means vital action is for a time suspended, and the embryos of floral development are elaborated and matured. Without some period analogous to this, no flowers can be rationally expected from such plants.

There exists in the vegetable creation a constant tendency to imbibe the food most congenial to its wants; and where a supply is always furnished, provided the atmospheric conditions be at all favourable, a perpetual accretion will be maintained. Still, as long reflection is necessary to produce advantageous results from the accession to the mind of a large amount of information; so, a period in which the juices may be duly distributed, assimilated, and solidified, is equally indispensable to fertility in plants. When the energies, either of the human intellect or of a plant, are incessantly devoted to the acquisition of extraneous matter, nothing will be matured, nothing perfected, and there cannot, consequently, be any worthy product.

The applicability of the above observation will speedily be perceived. Although the provision of a somewhat enriched soil, and the administration of a liberal quantity of moisture, is undoubtedly beneficial to Epiphylla at a certain point of their existence,—indeed, throughout the whole period of their *growth*, properly so called,—a too continuous inhalation of nutriment subverts the purpose for which they are cultivated, and prevents the elaboration of their inflorescence. Hence, while it is advisable to step rather beyond the bounds which Nature has partly prescribed in a few cases, it becomes of peculiar moment that the broad line of demarcation which she has marked out between the seasons should be regarded, and the great principles which characterize her procedure preserved in full force.

To particularise more explicitly, we must pass to the chief items in the culture of Epiphylla. It is of comparatively little consequence what kind of material is used for potting or planting them in, or whether they are placed in pots or wire-baskets, so long as their roots are fairly covered with something which will dry readily, in order to give facility for keeping them arid in the autumnal and winter months. With adequate security on these heads, they may even be attached, with thorough impunity, to a piece of rough wood fastened to the wall, suspended from the roof, or having its base plunged in the bed of the house, and enveloped in sphagnum-moss. Such a mode would be well adapted for *Epiphyllum speciosum*, some other very flat-leaved species, and *Cereus flagelliformis*. They would constitute a novel and highly-interesting feature in an orchidaceous-house for the summer season, and might be removed from thence to a drier department in the autumn.

Wire, wooden, or any other rustic baskets, might, again, be employed with propriety for the same and similar plants; merely filling them with sphagnum, intermingled or not with potsherds, according to the grower's pleasure. We have repeatedly had the opportunity of observing that the roots of all Cactaceæ, when surrounded by moss instead of soil, have been more abundant and healthy; and are impressed with the conviction that sphagnum is a very suitable medium for these plants, since it will admit of being saturated with moisture, or entirely divested of it. Only one impediment to its general adoption seems to us of any import—which is, that its appearance is more deceptive than that of earth, a close examination being needful to discover whether it is really or simply superficially dry, and water is lurking beneath its surface.

But whatever may be said of sphagnum with regard to safety, and as a means of inducing a moderate degree of perfection, it is certain that the rich soil made use of in a few gardens, brings the stems of the class of Cactaceæ now beneath our notice to a state of luxuriance far surpassing that usually attained. The soil in question consists of fresh loam, taken from a meadow about a year before it is required, and mixed with finely-broken stone or brick-rubbish, well-pulverized leaf-mould, or manure, and silver sand. Of these, the former should be in the proportion of two-thirds, and the others in nearly equal quantities.

In addition to the necessity for selecting a medium for the sustentation of the roots through which water will easily pass, the description of receptacle adopted in potting, appears to us to demand more attention that it commonly receives. For plants to which aridity is so serviceable in the winter, and humidity so prejudicial or fatal, it might be supposed that the gardener's ingenuity would be exerted to devise a method of forming pots or baskets which would effectively obviate any undue accumulation of fluids. As far as our knowledge extends, this very simple operation has never been carried out: our suggestion will, therefore, we trust, not be without its value. We desire to see pots for Cacti manufactured in the way in which those for Orchidaceæ are occasionally made, with numerous and large perforations in the sides and bottom, for the escape, either by evaporation or more speedily, of such liquid as would otherwise settle in the soil. Wooden or wire baskets, with meshes of from one to two inches square, would be still more useful, and if some of the most tender and dubious sorts were hung in these from any elevation in the house, the probability of the drainage being effectual would amount to an almost absolute certainty.

As to the temperature in which the various species comprehended in the present article ought to be kept, it may be said that, with the exception of three or four months in the year, they can scarcely be treated too roughly in this respect. This class of plants flower principally in the spring season, at which time we will presume they are standing in a house of which the heat is not higher than that of an ordinary greenhouse. After their flowers have faded, the growing stage begins; and just at the period between those epochs, they should be repotted into the compost before recommended, using pots one size larger where the roots have reached the edges, and replacing them in the old ones in any other case. Frequent syringing in a most warm atmosphere may succeed this process, and the plants must be retained in a high state of excitation till their developments are matured, when the extra heat should be gradually withdrawn from the house, the moisture diminished, and the specimens reduced to positive torpidity. If it be more convenient to place them in hotbed frames for the summer, nothing will be so genial as the heat from fermenting manure or bark, and they can be managed exactly as the kinds treated of in a former paper, save that a rather less heat is requisite.

Immediately after the diminution of the supply of heat and water to the ratio of that of the external air, all the subjects of this dissertation are to be removed thereto, with the view, already indicated, of checking the further elongation of their stems, abstracting a portion of their fluids, and causing the rest to resolve themselves into the peculiar nature of the plant, and form the rudiments of future flowers. It may very truly be said that warmth and moisture are much needed by Cactaceæ in summer to promote their enlargements; but when speaking of autumnal exposure for the purpose of rendering them floriferous, we must adopt stronger expressions, and consider it as a *sine quâ non*.

An excellent proof of the preceding statement occurred beneath our cognizance a short time since. An old specimen of *Epiphyllum speciosum* was turned into the open air in the month of August, and there abandoned to its fate. On the approach of frosts, however, it was carelessly thrown into a dry shed, and again cast out from thence in the ensuing spring. The plant then exhibited a most miserable appearance; the leaves being browned and shrivelled, and death being obviously inevitable. In a few weeks, notwithstanding our anticipations, the showers of rain and the mildness of the atmosphere restored it, and it blossomed in the summer more profusely than any specimen which had been carefully nursed.

In bringing forward the case just cited, our main design is to show that prudent exposure is of the greatest benefit to Epiphylla. Had the autumn of the season mentioned not been a very dry one, detriment rather than advantage would have resulted to the plant. Hence, though we advocate the transference of these objects to the open air, we must be understood to qualify this by assuming that they have something over or near them by which they can be protected in wet weather; for the good effects of the sun's action upon them would be immensely overbalanced, if they were at the same time unsheltered from heavy rains. Indeed, direct solar light will be of less service to them than aridity; but, in conjunction therewith, it is an important assistant to prolificness, and should by all means be obtained.

Considering the circumstances herein displayed, rather than turn Epiphylla entirely out of the houses or frames in which they may be growing, we would take the lights from these about the month of August, and leave them exposed, except when the weather is showery, till frosts become frequent. We give preference to this plan because, by placing Cacti completely in the open air, they cannot be easily screened from rain; and the subjection to wet of any kind is to be looked upon as the most serious evil which could befal them. Besides, by standing uncovered during the night, they suffer all the injury which can accrue from a cold damp air. We are aware, that in the last declaration we place our opinion in opposition to the popular one, which supposes that the influence of cold assists much in imparting a character of utility to exposure in autumn, by checking the disposition of the plants to make further progress: but we steadily maintain that light, heat, and dryness, are the sole agents in ripening the immature growth, and fitting it for bearing both stems and blossoms in the ensuing year. Night air must, by consequence, be prejudicial not useful.

It may occasion surprise that we should have included the genus *Stapelia* in a paper on Epiphylla, since the latter are not seldom met with in cottage windows, or cultivated as greenhouse plants; whereas Stapelias are almost universally ranged with the stove species. That these plants really require the temperature of a stove, we cannot bring ourselves to believe. And if we had to assign a reason for the numbers of them which yearly perish in our collections, we should attribute it unreservedly to the artificial position they occupy. It surely must have been forgotten that they are natives of the Cape of Good Hope, and that the dry air of the greenhouse is precisely that which they need. Unless considerations like these are allowed to bear upon their culture, we decidedly think they will be for a time exterminated from our gardens, as they have already been in places that we could name.

In another and final paper, we purpose embracing the management of those succulents which have not yet been specifically noticed.

REMARKS ON RUSSELIA JUNCEA.

A FIGURE of a portion of this exquisite plant may be seen in vol. iv. p. 79 of this Magazine. We refer the reader to it, and to the accompanying description. It is our object to correct error, and obviate misconstruction; and though, with one exception, we perceive no reason to alter our opinion, or to retract anything stated with respect to the general treatment of the plant; yet the experience of three succeeding years has not failed to instruct, and we can vouch for the correctness of the following remarks, which have been communicated by one of our earliest correspondents.

It is said in page 80, that "It delights in good sandy loam, mixed with about one-third peat, and a little sand." This passage is sufficiently inconclusive: for what *is* a good sandy loam? There is scarcely a gardener in England who will not tell you, "Mine is such:" and yet there are not any two gardeners in all the British empire who could produce as many specimens which, if chemically or even mechanically tested, would be found to correspond. Again, what is peat? it is the sodden vegetable remains of rushy bogs—inert, antiseptic, vegetable matter, that can be brought to little worthy account in the garden! Again, what is a little *sand?* We will not, however, be hypercritical; for, practical gardeners know pretty well how to apply such generalizations: it is the unhappy amateur who "perishes for want of knowledge," and who sees his "beauties" fade under his eye, one after the other, while attempting to conform to instructions which he cannot, in reality, appreciate.

We write feelingly, because we have paid a little for our experience, and can most unequivocally state, that, having raised several plants of *Russelia* with great facility, by merely *laying small green slips on the surface of wet writing sand*, over *a stratum of heath-mould* in a well-drained pot, and covered with a bell-glass; we struggled for two years to make our plants grow in any loamy compost whatever, modify it as we would. Yellow and stunted the plants remained till the end of the late spring, when we met with two or three grand specimens at the garden of the Marquis Thomond, which we recollected to have seen as little nurselings some three years ago.

They have twice been covered with bloom to an equal extent with that of the branch depicted; and comprise, each, six or eight strong shoots a yard or more in length. The question which then naturally suggested itself was, how to obtain healthy verdure, rapid growth, and a flowering condition; and to this question, in the course of three months, we have obtained a favourable solution, from merely attending to one word dropped by the gardener.

The roots of *Russelia* consist of fibrous masses, and plants so furnished rarely prosper in loam; but they succeed, with few exceptions, in the earth which of late years it has been fashionable to call *peat;* by which term, gardeners mean the soil of heath-commons. In some counties none of this heath-soil or moor-earth is to be obtained: in others it is abundant. If deficient, it can be most successfully imitated by collecting masses of leaves and small sticks of trees (the fir-tribe particularly) which do not grow upon chalk; and exposing them to the weather till they decay to a complete black or brown mould. To the soil thus produced, one third part by measure of fine white sand may be added at the time of potting.

But nothing can be compounded which will answer every purpose of heath-soil; therefore, whenever *that* is procurable, it should be employed for Azaleas, heaths, the plants of New Holland, and most of the tribes with hair-like fibrous roots.

In the late spring our weakly *Russelias* were deprived of much of their loamy compost, and repotted with the *black sandy heath*-mould of Bagshot in Surrey; and being kept under glass, and regularly watered, they have acquired verdure, and are coming into bloom.

We have nothing to add to the other directions alluded to; but those readers who feel a doubt of the correctness of our remarks, may derive some confidence by perusing the few lines which follow, extracted from a letter that we received lately from one who has the care of a very extensive collection of plants in a fine establishment not remote from Epsom in Surrey.

"*Russelia juncea* may be readily propagated by cuttings, either of single pieces or of older portions with two or three young shoots on them. The soil in which this plant thrives is sandy, turfy, open peat, (heath-soil,) with the pots well drained, and the mould interspersed with crocks,—an excellent practice with all hair-rooted plants: be careful not to ram the soil hard round the ball."

RUDIMENTS OF THE NATURAL SYSTEM OF BOTANY.

NO. V.

Continuing our brief analysis of the various parts of a plant which furnish marked characters for the definition of Natural Orders, we next reach the second and most showy feature in the inflorescence, which is termed the corolla. A corolla is usually composed of coloured leaves or petals, situated within the calyx, and generally distinguished therefrom by its greater size and the superior richness of its hues, but most accurately known by its position, the calyx being always on the outside. Thus, in Lilies, and the flowers of many other bulbous plants, the whole blossom is called the perianth, while the outer segments or sepals, though similar to the rest, are properly the calyx, and the inner ones, or petals, form the corolla.

In some plants, the corolla is ever present, unless removed by casualties or disease; and these take the name of dichlamydeous. Two divisions are observable in this group, which are very readily known by their external aspect, deriving their title from possessing one or more petals. Monopetalæ, for instance, consist of flowers which often have manifest segments, but have no actual separation all round the corolla, which is commonly of a bell shape. Polypetalæ, on the other hand, have their corolla partitioned completely down to its base. Those plants which have no true petals are denominated *Apetalæ*.

The æstivation, or bud-state of a corolla, is occasionally but rarely useful in fixing the position in the Natural System of the plant bearing it. It is either valvate or contorted; the former being a condition in which it projects itself straightly and opens regularly, and the latter having a twisted appearance, which unrolls itself gradually with the progress of expansion.

From the contour of the corolla, important characters are frequently deduced, which, on account of their simplicity, tend much to assist the student. A corolla is said to be regular when all its divisions present a near equality in size and shape, and irregular if they vary considerably. Of both these forms, there are many varieties, which serve to detach several orders.

Proceeding still nearer to the centre of the flower, we discover a greater or less number of small processes, which comprise the sexual organs of plants. They are usually regarded as metamorphosed leaves—an hypothesis which cannot be admitted until the outer members of animals are reduced to modifications of one type. It is here, indeed, that the tendency of scientific writers to indulge in visionary theorizing is most painfully conspicuous. Assign to plants no specific propagational organs, and their reproduction becomes entirely fortuitous, the beautiful harmony of Nature is destroyed, and a link in the scale of creation is broken.

As vegetable metamorphoses, or the change of all the minuter parts of plants from the common structure of leaves to that which they usually assume, is a point firmly insisted on by most botanists, and as we wish the student to examine every question of this kind for himself, it will be worth while to state upon what grounds so apparently extravagant an opinion is based. We must confess, therefore, that we never could discern any other foundation for this hypothesis than the fact that certain species, in a state of high cultivation, or, more plainly speaking, in altogether unnatural circumstances, develop themselves in a monstrous manner, and convert some of their members into a form more nearly assimilating to that from which they are all supposed to spring. For example, many single flowers will, when strongly stimulated by rich manure, have their stamens transformed into petals, or, in particular cases, their petals changed into common leaves.

Let the light of pure reason, however, be brought to bear on this subject, and it will, we submit, be at once clear that the modifications here described are only departures from the universal law of Nature, owing to the plant being placed in a false position, and utterly unworthy of being regarded as the rule to which the common modes of growth are exceptions. The theory of vegetable changes must, therefore, be branded by us as a thorough chimera, having no foundation in Nature, and merely being called into existence by what may at once be shown to be nothing but vagaries, dependent on artificial applications.

To return to the consideration of stamens, so far from deeming them abortive leaves, we attach to them considerable interest, knowing that no species of flowering plant can be multiplied by seed without a communication is in some way established between them and the female organs. It will be remembered by all who have studied the Linnæan System of classification,—and, for young beginners, we would recommend a short attention to that point,—that the number and situation of the stamens, or male parts of the flower, determine the majority of the classes. In the great Natural arrangement, such aids are not altogether abandoned; but they are brought to their proper level, and rendered quite subordinate. More dependence is placed on the existence of male and female organs in the same flower, or in different flowers on the same plant, or in different flowers on different plants. Where both the sexes are found in one flower, such a flower is named hermaphrodite; and various names are given to the arrangements in which they cohere in bunches, or are otherwise situated with respect to each other.

But the chief feature of importance connected with the stamens is the point at which they are attached to the part that supports them. If the stamens proceed from below the base of the ovarium, without adhering to the exterior members, they are called hypogynous; and this term is invariably made use of throughout the descriptions of the Orders. If, again, they spring from the calyx or corolla, being affixed to it in any manner, they obtain the appellation of perigynous. And should they issue from the summit of an inferior ovary, (*i. e.* an ovary which has the whole of the flower on its apex,) they are denominated epigynous. Modern botanists make little distinction between the two last terms, as they assert that all stamens have their origin beneath the ovary. Still, that the words may be comprehended when they are afterwards used in description, we have thought it better to explain them.

The last peculiarity in the stamens we shall here mention, is that the dissimilarity in regard to the length of their filaments, or the slender thread-like stalks on which they are raised, is of some use to the examiner of the Natural System; and the singular abortions which prevail in a few Orders, wherein a certain number of stamens are regularly turned into petals, with the curious want of symmetry in others which have no correspondence in the quantity of their petals and stamens, are facts which it will be necessary to retain in the memory.

By descending into a more refined investigation, we find the stamen to have a little ball, containing the pollen-grains or fertilizing matter, on its summit, and to this botanists have given the designation of anther. The anther ordinarily consists of two nearly parallel cells, which open longitudinally. Sometimes, however, this character is departed from. One Natural Order has pollen with only one cell; another ejects its pollen through pores; a third throws off the entire face of the anther; and there are still further differences in the manner by which the anthers are connected with the filament. Even the pollen itself, or that powdery substance which covers the anther, is made available for detecting affinities, since it is existent, in one or two Orders, in quite a waxy state.

Not to pass over any subject which will be likely hereafter to be brought forward, we quote the following from Dr. Lindley's excellent Introduction to the Natural System:—"Immediately between the stamens and the ovarium is sometimes found a fleshy ring or fleshy glands called a *disk*, and supposed, for very good reasons, to represent an inner row of imperfectly-developed stamens. The presence of this disk is constant in *Umbelliferæ*, *Compositæ*, *Labiatæ*, *Boragineæ*, *Rosaceæ*, and many others, while its absence is equally universal in others. It is not, however, much used as a principal mark of distinction, its real value not having been yet ascertained." It is stated as very remarkable that this disk, although discernible in some orders which have the divisions of their pericarp or seed-vessel arranged right and left with regard to the direction of the flower-stalk, is not to be discovered in those which have them pointing to and from the general axis.

Extending our investigation to those members of a flower which lie still more concealed, the ovarium next meets our view. This is ever considered as the female organ of a plant, or that by which an increase is occasioned. It projects a single column from its summit, called the stigma, which is either preserved entire or divided into a greater or less quantity of lobes. Such a division of the stigma, though often useless in itself to the inquiring student, is valuable as a pretty correct index to the separation of the ovary; for on the partition or non-partition of the latter organ, an important distinction is based.

Where the ovary is present, it has an exterior envelope or case, which protects the seeds, and is designated the pericarp. When it is palpably partitioned, it is styled apocarpous; and when the partitions are all conglomerated into a central column, it takes the name of syncarpous. Considerable import is attached to these differences. The divisions or walls of the ovary, separating it into distinct chambers or cells, have received the appellation of placentæ. The position of these latter in reference to the axis of inflorescence, constitutes an essential feature in some Orders, as they either diverge to the right and left, or point towards the stalk and in a contrary direction. Lastly, the ovary is sometimes inferior and sometimes superior to the calyx, the utility of which character has been pointed out under the remarks on the latter organ.

FLORICULTURAL NOTICES.

NEW AND RARE PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR OCTOBER.

Batàtas betàcea. A very interesting and novel Convolvulaceous plant, native of Demerara, from whence it has recently been imported. Its greatest peculiarities are the red, fleshy, fusiform roots, which are said to resemble red beet, and purplish white flowers, with a dark centre. The species has a climbing herbaceous habitude, with ordinary leaves, and large axillary racemes of showy blossoms. "According to Mr. May, of the Ripon nursery, who first had it for sale, it is a stove plant, with sufficient hardiness to succeed in a good greenhouse; which, considering the habits of such plants, is probable; but it is doubtful whether it will flower well without high heat." *Bot. Reg.* 56.

Calánthe díscolor. Most probably introduced from Japan or Java, and first flowered at Ghent, but subsequently in England. "Its rich wine-red sepals and petals form so good a back-ground for the white lip, which they so much relieve, that this species is to be regarded as one of the handsomer species of the genus, and is certainly much more worth cultivating than *C. veratrifolia*, *furcata*, or *densiflora*, which have whole-coloured blossoms." Plants sometimes grow a foot and a half in height, and seem to flower profusely. It requires to be planted in heath-soil, as the other species of the genus, and kept in a moist stove in summer. During winter, a cool dry house will be preferable. *Bot. Reg.* 55.

Cystánthe sprengelioìdes. A singular shrub, discovered by Mr. Brown in Van Diemen's Land, and very like a *Cosmelia* in general appearance. It is of an erect branching character, with small, rigid, stem-clasping, evergreen, reflexed leaves, and insignificant greenish yellow axillary flowers, which are, however, disposed in a cluster towards the ends of the branches. "The specimen described (now three feet and a half high, and growing freely) was raised in 1836 at the Botanical Garden, Edinburgh, from seeds obligingly communicated by N. B. Ward, Esq., of London, in the autumn before." Altogether it seems a plant of no particular ornament, with some curious botanical features. *Bot. Mag.* 3826.

Echevèria secúnda. This exceedingly pretty plant forms a fine addition to the genus *Echeveria.* With the aspect of a common Houseleek, and a similar arrangement of its leaves, it produces its blossoms solely on one side of the spike, and does not seem to have so straggling a flower-stalk as some of its allies. The leaves all curve inwards, are mucronate at the points, and have a reddish band round the margin. The flowers are of a bright scarlet colour, yellow internally. "It has now been cultivated for some time in the garden of the Horticultural Society, where it was received from Sir Charles Lemon, Bart., and it proves a very beautiful greenhouse plant, of the easiest management, remaining in flower during many weeks in the summer." If kept in a sitting-room or greenhouse, it should be freely exposed to light through the summer, and duly protected against dampness. Suckers spring from its sides, which may be taken off and potted in sand, when they will soon strike root. *Bot. Reg.* 57.

Hardenbérgia digitàta. "A new Swan River climber, raised by Mr. Toward in H. R. H. the Duchess of Gloucester's garden, at Bagshot. It is clearly distinguished from all the previously discovered species of the genus, by its leaflets growing in fives, not in threes. Its flowers too are smaller than in any of the other species." It is a slender greenhouse climbing shrub, of rather weak growth, and bearing a considerable number of its neat blue blossoms, which appear in long racemes, and are elevated on lengthened peduncles. Having first bloomed in April of the present year, it is supposed that it will generally flower in the spring. A round trellis is an excellent thing for supporting it, and it thrives in common compost. *Bot. Reg.* 60.

Hymenóxys califórnica. From Californian seeds presented by Mr. Buist to Mr. Moore, and raised by him in the Glasnevin Botanic Garden, this small and almost worthless annual has originated. Its stems grow to the average height of a foot, and are seemingly very much attenuated, while the leaves are pinnatifid, and the flowers are borne solitarily on long terminal peduncles, being of a yellow colour, with a tinge of brown round the outside of the disk. It is expected to prove a common hardy annual, and much of its tenuity may be owing to its having been grown in a pot. The flowers are expanded in September. *Bot. Mag.* 3828.

Lemònia spectábilis. Imported by Messrs. Loddiges from Cuba, and flowered in their collection in August last. It forms a beautiful dwarf shrub, and flowers so abundantly, that when its blossoms had been opened for several weeks, it is represented as "a plant of no ordinary ornament. Of course it will be a stove plant; but when we consider how few stove shrubs will produce their blossoms, such a novelty as this is doubly welcome." The leaves are opposite, trifoliate, and, we believe, evergreen. From their axils, the flower-stalks, which are about the length of the leaves, are protruded, bearing generally about two showy reddish purple blossoms on the summit. Dr. Lindley has named the genus in compliment to Sir Charles Lemon, Bart., M.P., for the liberality with which he has long supported botanical science. *Bot. Reg.* 59.

LIÀTRIS PROPÍNQUA. Sir William Hooker says that this species was "sent from the Horticultural Society's Garden of Edinburgh in the autumn of 1839, under the name of *L. paniculata.* With that species it has no affinity, nor can we find any described one, nor any in our extensive herbarium of North American species, that will correspond with it." It is nearly related to *L. spicata*, but is much smaller in every respect, and has fewer leaves, with sharper scales to the involucre. From the pointedness of its bracts, it has derived its name. The habit is weak and somewhat rambling; and the flowers are too diminutive to be very ornate. It is only valuable as an autumnal-flowering plant. *Bot. Mag.* 3829.

RHODODÉNDRON ARBÒREUM; CINNAMÒMEUM, FLÒRIBUS RÒSEIS. All this array of names is intended to indicate that the subject of them is a rose-coloured sub-variety of the tree Rhododendron, or a variety of what is sometimes called *R. cinnamomeum.* It is undoubtedly a most magnificent plant, producing immense clusters of flowers, some of the individuals on which, according to Mr. Campbell, of the Manchester Botanic Garden, with whom it has blossomed in March of the present year, are two inches and a half in diameter. The foliage, too, is extremely fine, and has a deep brown hue on the under side. We should judge it to be the noblest *Rhododendron* which has hitherto bloomed in Britain, and especially meriting cultivation in large collections. The blossoms are of a pale rose colour, prettily spotted with red, and opening very widely at the mouth. The appellation is rather an unfortunate one, from its extreme length, and as it is not at all likely to come into general use, the merit of the plant would far more readily be appreciated if the name of its collector or of the person who primarily flowered it were substituted. *Bot. Mag.* 3825.

SENÈCIO HERITIÈRI; *var.* CYANOPTHÁLMUS. A curious variety of the old *Cineraria lanata* of the gardens, rendered particularly striking by having white rays to its flowers, with an intensely blue disk. Sir William Hooker observes that "Compositæ with a white ray and yellow eye or disk are common, as every one knows, but I have never met with any having a white ray and a blue disk." It was communicated by Mr. Morrison, gardener to — Clelland, Esq., of Rosemount, near Belfast, in whose greenhouse it flowered in May 1839. The rays of the blossoms are large and a little recurved, and the contrast in the colour, as well as its singularity, is no doubt highly pleasing. *Bot. Mag.* 3827.

NEW, RARE, OR INTERESTING PLANTS IN FLOWER IN THE PRINCIPAL SUBURBAN NURSERIES.

ANGRŒCUM BILÒBUM. The species which we noticed in our September Number, p. 187, as blooming with Messrs. Loddiges, and which was then without a specific name, has received the above appellation from Dr. Lindley, on account of the peculiar indentation at the end of its leaves; thereby dividing them into two short, unequal, rounded lobes. It is now again blossoming in the same collection, and appears to be remarkably prolific of its beautiful white flowers, which are finely scented in the evening.

Angrœcum pertŭsum. Another and most singular species of the genus *Angrœcum*, bearing the title here given, is likewise flowering at the Hackney Nursery, and attracts especial notice by the numerous and long racemes of small white blossoms it is at present producing, and the very curious aspect which the surface of these presents. The plant has strong, healthy, and large leaves, arranged closely, and altogether composing a rigid, vigorous habit; while the racemes of flowers are projected almost horizontally. The blossoms are situated in two rows, one on each side of the axis, and their columns are disposed with the greatest regularity along the top of the stem, within a very short distance of each other, the lips spreading out below them with equal precision, and thus giving the appearance of the bared back-bone of a small animal, with its numerous vertebræ protruding above the surface. It is a particularly interesting object, and peculiarly calculated to fix the attention of the lover of strange forms in Nature.

Barbacènia purpŭrea. A very showy old stove plant, which we have lately observed flowering in the Epsom Nursery, and which deserves mention both for its scarcity and the indescribably rich purple hue of its flowers. It seems to be a subshrubby species, bearing short narrow leaves, after the manner of *Witsenia corymbosa*, and elevating its solitary blossoms on a long peduncle. The flowers are not very dissimilar to those of the common Corn Cockle, but are of much more brilliant colour, and have a small cup, composed of several segments, in their centre.

Catasètum maculàtum. Not very widely different, in the comparatively uninteresting character of its flowers, from most of the other *Cataseta*, and a native of New Granada, from whence it was introduced in 1836. A specimen which is exhibiting its blooms in the Orchidaceous house of Messrs. Rollison, Tooting, displays a rather more contracted labellum to its flowers than is usually seen, and has sepals and petals of a green colour, pretty regularly spotted with reddish purple. We note these as its most obvious characteristics, for in other points it has the ordinary features of the genus.

Cœlógyne elàta. This most beautiful Orchidaceous plant, which, like the whole of the species to which it is allied, is a denizen of Eastern India, may now be witnessed in a flowering condition at the nursery of Messrs. Loddiges, Hackney. Its pseudo-bulbs are oblong, pale green, and very slightly furrowed; the leaves long, lanceolate, and particularly smooth; and the flowers, borne on an erect spike from the summit of the pseudo-bulbs, are of a delicate white, with two large orange blotches on the lip, the distinction of which would scarcely be perceptible were it not for two red stripes that separate them longitudinally. The flower-spike, when the specimen is growing very vigorously, sometimes attains a considerable altitude, but that of the plant here alluded to is not more than a foot high.

Comparéttia ròsea. The charming *Comparettia coccinea* is yet insufficiently known to be referred to as a measure of the beauty apparent in the present species; but to those who have seen either the flowers or a figure of that plant, it may be said that *C. rosea* promises to be scarcely inferior. It is so rare, and seems to require such great care in its culture, that the blooming specimen at Messrs. Loddiges not having been long introduced, and far from being firmly attached to the wood on which it is placed, cannot be regarded as indicating the degree of elegance it will ultimately reach; but even this is an interesting object. In its existing state, the leaves are diminutive, and have a brownish purple tinge, while the long and extremely gracile raceme of flowers depends from the plant, developing one or more of its pretty deep rose-coloured blossoms at a time. These are chiefly noticeable for their lively hue, the spacious labellum, and the posterior tail, which is about half an inch long.

CURCÙMA ROSCOËÀNA. We direct the attention of our subscribers to this splendid plant in the present instance, with the view of stating that all we have advanced regarding its merits is more than confirmed by a fine specimen which has been in flower with Messrs. Rollison, Tooting, for more than two months, and has not yet begun to fade. The spikes of flowers are fully eight or nine inches long, and perhaps nearly four inches in diameter from end to end. The hue of the floral envelopes is a gorgeous scarlet, relieved by the bright yellow blossoms they contain. Altogether, the plant is very little more than a foot high. From these imperfect particulars, its real nature and value may in some measure be gleaned.

DENDRÒBIUM DENÙDANS. Those who have any knowledge of the flowers of the delightful little *D. alpestre*, will be able to form a very correct idea of the same members of *D. denudans*, since the only marked difference, on a superficial glance, is in the greater size which the blossoms of the latter species attain. The colour of the sepals and petals is a similar greenish-white, and that of the labellum is also whitish, with faint lilac stripes. It is by the stems that they are most easily distinguished; for in place of the short erect ones of *D. alpestre*, this plant has long drooping ones, which are rather thicker, but have a transparent appearance, like those of the other species here named. It is an exceedingly neat plant, and Messrs. Loddiges have blooming specimens.

EPIDÉNDRUM ARMENIÀCUM. There is nothing at all alluring in this minute species, which belongs to the caulescent class of *Epidendra*. It grows about nine inches high, has rather strong stems of the kind, narrow foliage, and terminal spikes of insignificant, apricot-coloured blossoms, which are interesting solely for their hue. A plant of it is now bearing a quantity of its inflorescence in the stove of Messrs. Rollison, Tooting.

EPIDÉNDRUM BOOTHIÀNUM. Superior in every respect to the species last noticed, this pretty *Epidendrum* has claims to a tolerable share of the cultivator's esteem. Its pseudo-bulbs, when old and partially withered, are highly curious, being so compressed and flattened as to resemble those of some *Oncidia*. The flower-spike proceeds erectly from their apex, and is adorned with many blossoms, of which the ground colour is yellow; but the broad transverse bands of reddish-brown with which they are so liberally marked render the yellow scarcely perceptible. From a specimen which is at present developing its flowers in the collection of Messrs. Loddiges, we are led to conclude that its dwarfness and generally alluring character entitle it to the designation of one of the neatest species of the extensive genus to which it belongs.

OPERATIONS FOR NOVEMBER.

No more trying month than November for tender plants, or one the influence of which is longer and more prejudicially felt by them, if not properly counteracted, can be selected throughout the whole year. With an external temperature commonly oscillating, as it were, between mildness and frost, and an atmosphere very generally surcharged with vapour, it is quite an arduous task to keep exotics from being either too much excited, too damp, or too cold; all which conditions are to be carefully shunned.

It is now, indeed, that the qualifications of the cultivator will be exhibited. If dormancy has been timeously induced, and the annual developments duly ripened; whatever weather may be experienced, the plants will be prepared to sustain it: and with the requisite attention to the maintenance of a sufficient degree of dryness, no injury can result to any of the objects of solicitude. In this case, the experience of the manager will be at once manifested. But if the vessels of vegetation be yet filled with fluids, and their branches, consequently, be still green and imperfect, a want of consideration will be apparent, for which no subsequent care can fully compensate.

In all sorts of plant-houses, save such as are employed for forcing, or for protecting plants to which continual stimulation is useful, one great principle of action, so far as relates to temperature, should be observed. Whether the species require the heat usual in a greenhouse, a stove, or a structure of intermediate temperature, the thermometer ought always to be regulated according to the vicissitudes of the seasons, and kept just so many degrees above the ratio of a shady situation in the exterior air. An absurd practice of maintaining a temperature never below 50° in the stove during winter, has long prevailed, and cannot be too strongly spoken against. Where it is pursued, likewise, the summer heat is brought as low as possible, and the nearest practicable approximation to uniformity of temperature throughout the year is sought.

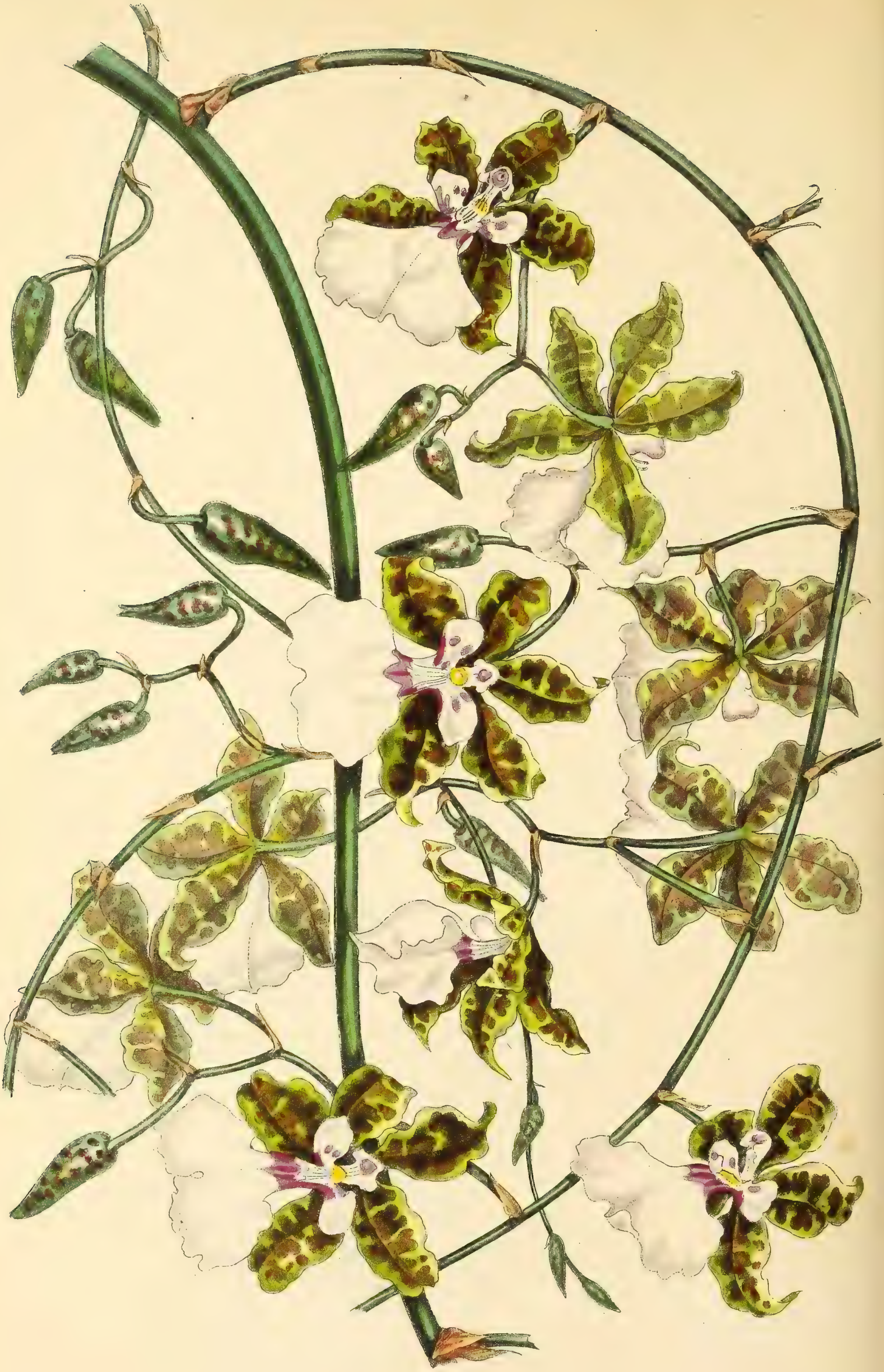
A very trifling scrutiny into the peculiar course of the seasons in tropical countries will show that this system is wholly unnatural, and that there is a cold period as well as a warm one in most localities. The most rational way, therefore, of treating all exotic plants in this country, is to let them enjoy the full benefit of solar influence (at least, to a prudent extent, and still through the medium of the glass) in the warm months, and simply to shelter them from injurious frost when winter sheds its rigours over the face of the surrounding surface.

Upon this principle, we would have every plant at present under artificial treatment in that inert condition that scarcely any heat or water, or other tendance, shall be needed; and all that will be demanded of the culturist is to watch the changes in the weather, with the design of supplying a little fire if frost threatens to occur. As to the occupation of watering, it has now become almost a work of supererogation, and the less moisture is administered, the safer may all kinds of plants be conserved. In fact, it should only be resorted to in cases of actual withering, or where the plant is really suffering for want of it.

There is a certain class of Orchidaceæ, whose growth has, from any cause, been prolonged beyond the natural season, or which have not yet adapted themselves to the mutations of our climate, to which the foregoing directions do not apply. It is sometimes found necessary to keep these in a constantly warm atmosphere; but at the same time, it is desirable that a comparatively low temperature be preserved, and humidity dispensed with to the greatest possible extent.

It need hardly be added that forcing, also, is not included in any remarks on general management, since this is an operation completely foreign to the ordinary routine of culture. Where early-flowering bulbous plants or shrubs are wished for, they must be immediately placed in a rather moist heat. For all descriptions of forcing, nothing is more appropriate than a hotbed frame or bark bed; because much heat is thus economized, and a slight but pleasant humidity is kept up around the plants. It is of advantage to them, too, to have their pots plunged in some fermenting matter, which excites them agreeably and gently, and is more congenial than fire-heat. With bulbs, such a provision is especially requisite; and it is better to bury the upper part of them beneath the bark, that their surface may not be too much exposed to the aerial elements.

Many amateurs who take a delight in growing a few showy Hyacinths or similar bulbs for their greenhouses or drawing-room windows in spring, must have been frequently disappointed by seeing some of their finest sorts producing sickly or abortive shoots, and have probably inquired in vain for the cause. When we inform such that it is principally owing to the inability of the plant to develop itself with a rapidity proportionate to the quantity of moisture it imbibes, on account of its upper surface being acted upon too immediately by the atmosphere and its constituents, the propriety of covering the bulb with some light material will be directly seen. That this is truly the fact, may be proved by the admirable success of nearly every bulb that is plunged in bark till its growth has properly commenced. And even with the bulbs grown in glasses, we should prefer starting them in old bark, and transferring them to the glasses when their shoots are two inches long, for precisely the same reasons.



Oncidium leucochilum.

ONCÍDIUM LEUCOCHÌLUM.

(WHITE-LIPPED ONCIDIUM.)

CLASS.
GYNANDRIA.

ORDER.
MONANDRIA.

NATURAL ORDER.
ORCHIDÀCEÆ.

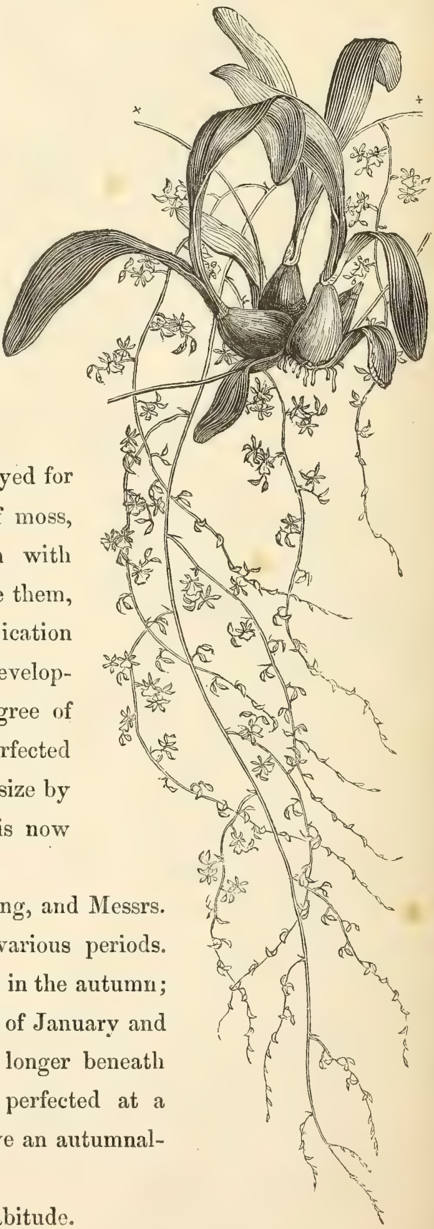
Generic Character.—*Vide* vol. iv. p. 77.

Specific Character.—*Plant* an epiphyte. *Pseudo-bulbs* oblong, rather attenuated at the apex, slightly furrowed. *Leaves* numerous, some sheathing the base of the pseudo-bulb, one on its summit, linear-lanceolate, acute, channelled. *Scape* tall, paniculate. *Sepals* and *petals* oblong, somewhat obtuse, nearly equal, much expanded. *Labellum* kidney-shaped, deeply two-lobed, emarginate, on each side white; lateral lobes retuse, small; crest three-horned at the base, toothed on each side; wings of the column scimitar-shaped, toothed.

In a genus like *Oncidium*, the species of which are so very abundant, and so rapidly increasing in number that several detachments have been made from the old group, and formed into new genera, in order to facilitate their recognition, and assist in preventing confusion; it is of the utmost moment that each species should have at least one prominent feature in its character by which it may be at once distinguished, and that, if possible, this point should be the one on which the specific appellation is founded. With the major part of *Oncidia*, we are happy to observe that such is really the case; and if a few of them are characterized by the peculiarities of insignificant or obscure organs, the plant now before us is one of the best defined with which we are familiar, unless it be those whose leaves furnish marks of distinction.

Without seeking any other criterion, the grower of *O. leucochilum* may, as soon as its flowers are expanded, immediately determine its name by the large and conspicuous white labellum, so strongly contrasting with the very lively yellowish green and brown of the sepals and petals. In one or two other species, perhaps, the same character exists; but these are directly known to have different designations by the dissimilar hues of the outer segments of the blossoms, their inferiority in size and showiness, and the general diminutiveness of the entire plant.

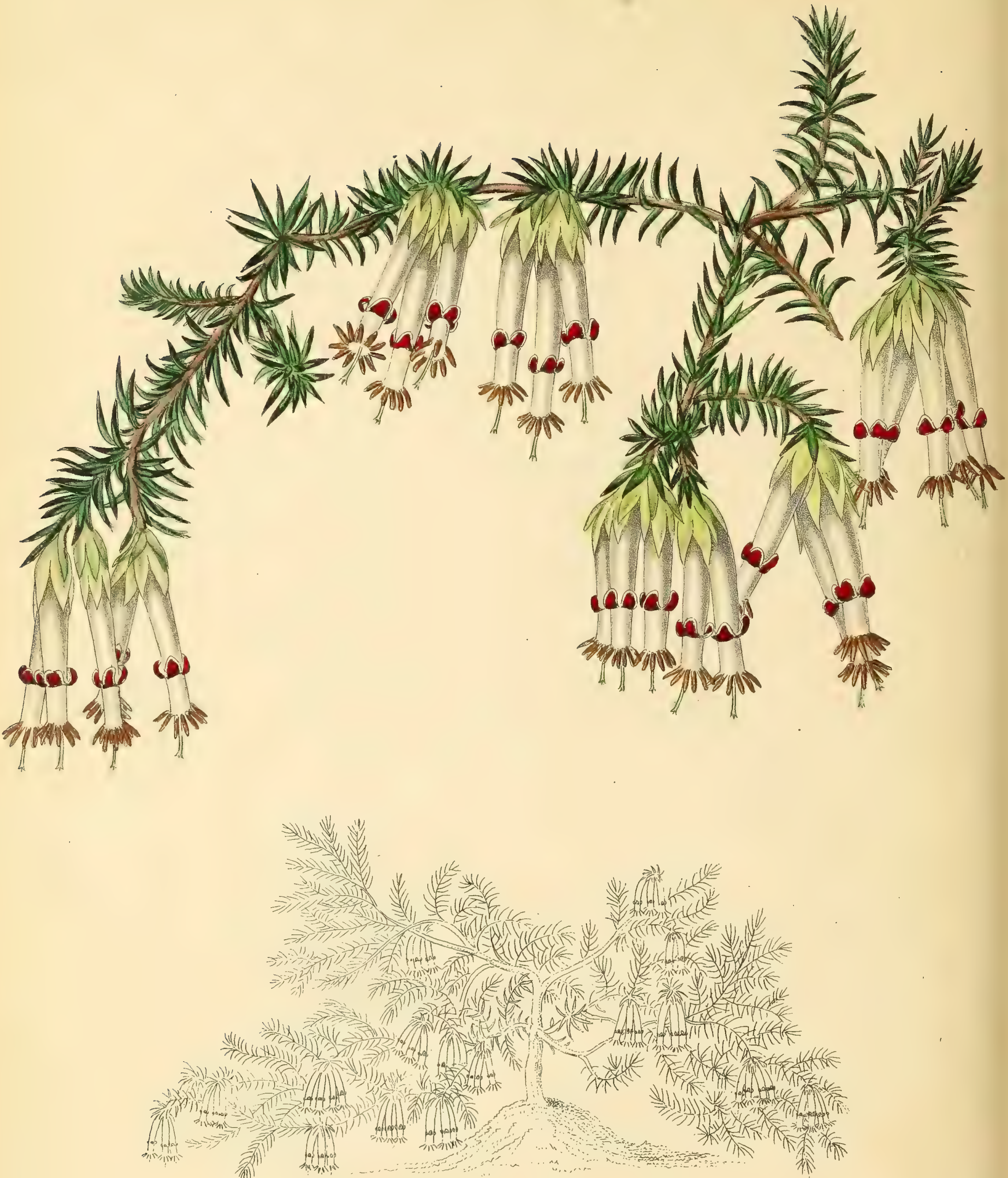
So far from *O. leucochilum* growing in a weakly or slender manner, like the kinds just referred to, it is equally as luxuriant, and attains almost as great an altitude, as any of the most exuberant sorts. Cultivated successfully, or according to the rules directly to be given, it reaches the ordinary height of seven or eight feet; and the specimen from which we procured our drawing, having bloomed in the earliest months of last spring at the gardens of the Hon. Baron Dimsdale, Campfield Place, Herts, produced a flower-scape nine feet in length, with thirteen or fourteen lateral branches, varying from eighteen inches to four feet in their extension. Suspended from the roof of the stove, the immense length of the stem, and the gracefully flowing form of the branches, beautifully bedecked with their finely variegated flowers, created a picture at once impressive and fascinating to the most indifferent examiner.



The plant above alluded to was imported from Guatemala, by Mr. Hockley Bunney, of the Kingsland nursery; from whom it was afterwards purchased for the gentlemen in whose collection it so freely flowered. Mr. Dunsford, late gardener to Baron Dimsdale, kindly informs us that the fine thread-like roots of this plant induced him to bestow upon it a somewhat different treatment from that given to the rest of the family. Instead of potting it in heath-soil, which is commonly employed for the other species, he reduced a quantity of moss, and, filling the pot nearly to the brim with drainage materials, placed the moss above them, in which the plant was fixed. By the application of a liberal supply of water while its developments were proceeding, a remarkable degree of vigour was manifested, and the newly perfected pseudo-bulbs exceeded the former ones in size by almost one-half; hence, the use of moss is now highly recommended.

Specimens at Messrs. Rollison's, Tooting, and Messrs. Loddiges', Hackney, have blossomed at various periods. The usual time of growing seems to be late in the autumn; and the flowers are developed in the months of January and February. Probably, when it has been longer beneath artificial culture, its accretions will be perfected at a more congenial season, and it will then prove an autumnal-flowering species.

The annexed woodcut represents its habitude.



Erica Banksiana.

ERICA BANKSIANA.

(BANKS'S HEATH.)

CLASS.	ORDER.
OCTANDRIA.	MONOGYNIA.

NATURAL ORDER.

ERICACEÆ.

Generic Character.—*Vide* vol. vi. p. 3.

Specific Character.—*Plant* an evergreen shrub, seldom growing more than eighteen inches high. *Branches* very dense, external ones partially drooping. *Leaves* usually in threes, awl-shaped, three-sided, acute, slightly channelled on the inner side, rigid, deep green. *Flowers* commonly in clusters of two or three, at the extremity of the smaller branches, with scarcely any peduncles. *Calyx* double; outer one consisting of three oval segments, inner one much larger, four-lobed. *Corolla* cylindrical, whitish, slightly swelling at the lower end, with reflexed red segments. *Stamens* protruded from the corolla on a tubular receptacle, with beardless anthers, which are not to be distinguished from the filaments. *Style* longer than the stamens. *Stigma* with four angles. *Ovary* nearly elliptical.

Messrs. Lucombe, Pince, and Co. of the Exeter nursery, having obligingly sent us the figure herewith supplied, and which was executed in a superior manner by Mr. S. Watts of that city, in the summer of 1839, we now lay it before our readers, satisfied that the exceedingly pretty plant it represents is neither duly known nor cultivated.

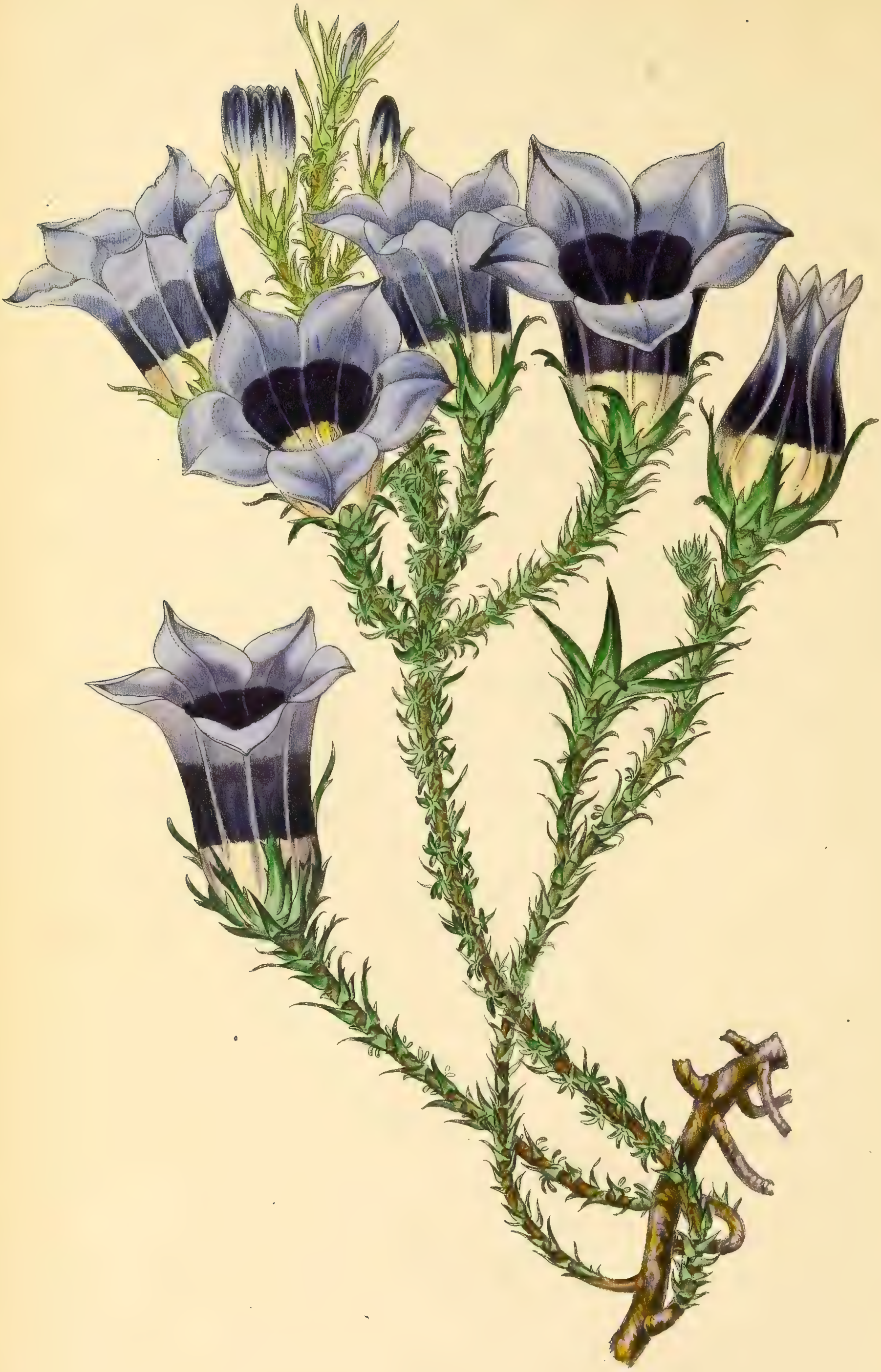
It has lately been asserted in this Magazine that the culture of Cape Heaths is experiencing a marked revival in Britain; and since that declaration was made public, we have seen sufficient to convince us still more thoroughly of its correctness. In provincial private establishments, it is beginning to be felt that a more lovely tribe of greenhouse exotics cannot be selected; while their numbers are so great as to admit of the most extensive choice. The fact, too, is becoming apparent that former ill-success is to be ascribed to the injudicious distribution of these plants among other greenhouse species, and not to any difficulty connected with their management.

Glancing at the metropolitan nurseries, we find Messrs. Rollison of Tooting, and Messrs. Henderson of Pine Apple-place, with a beautiful span-roofed house, appropriated to the culture of specimen Heaths; the structure of the latter gentlemen being quite a model for erections of this kind. Mr. Jackson of Kingston has also a very excellent collection, and Messrs. Young, Epsom, are acquiring some extremely healthy and valuable specimens. At Exeter, moreover, Messrs. Lucombe, Pince, and Co., have an assemblage of Heaths, which has very few rivals in England. Other firms might be mentioned whose zeal and prosperity in the cultivation of these plants are deserving of the highest commendation; we only specify the preceding as either having gained, or rapidly advancing to distinction in the pursuit.

Among the many worthy species that should help to compose a good collection, *E. Banksiana* possesses qualities which decidedly entitle it to esteem. Its extremely elegant and interesting flowers, depending so pleasingly from the points of the smaller shoots, present in themselves considerable attractions, both on account of their singular form and delicate tints. Besides having a double calyx, the stamens are projected far beyond the corolla on a curious cylindrical receptacle; thus giving the appearance of a second limb to the corolla, with numerous narrow segments, rather than an elongation of its tube simply to support the stamens. It is not, however, alone while the blossoms are unfolded that this charming Heath has claims to regard. Its exceedingly dwarf bushy habit, the shortness, denseness, and partial pendency of its branches, and the closeness as well as very intense verdure of its foliage,—which is so strong and rigid as to resemble that of some species of *Pinus*,—render it, in winter, one of the most ornamental of the spring-flowering Heaths. Its blooming season is likewise frequently prolonged from February to July; and a few scattered flowers are occasionally borne in the autumn.

Most of the species of *Erica* are natives of the Cape of Good Hope, of which our present subject is also a denizen, having been introduced to Britain towards the end of the eighteenth century. In those places where it is necessarily cultivated in a house to which a motley group of greenhouse plants are admitted, it should always be placed (in company with all its allies) on the front stage of the structure if it have only one slope, and on the outer stage, or that nearest the wall, if a span-roofed erection. This method is adopted very successfully at the Epsom nursery; and is to be praised because a more perfect circulation of air, and a greater proximity to the glass, can be obtained in such a situation.

Our coloured figure exhibits a flowering branch of the species of its natural size. The engraving beneath it delineates the whole plant, on a greatly reduced scale. There are several varieties, of which the plant depicted may possibly be one; but we believe it to be exceedingly like the primary species.



Roella ciliata.

ROЀLLA CILIÀTA.

(CILIATED-LEAVED ROELLA.)

CLASS. PENTANDRIA. ORDER. MONOGYNIA.

NATURAL ORDER. CAMPANULACEÆ.

Generic Character.—*Vide* vol. vi. p. 27.

Specific Character.—*Plant* shrubby, evergreen, growing a foot or more in height. *Branches* irregularly disposed, generally curving downwards a little at the base, and afterwards ascending. *Leaves* sessile, erect, linear, acuminated, ciliated; upper ones larger and entire. *Calyx* with five long, and deeply-toothed lobes. *Flowers* solitary, terminal, surrounded by imbricated leaves. *Corolla* large, longer than the lobes of the calyx, whitish at the bottom, with a deep purple band round the centre, which merges into pale violet, and ultimately into a pinkish blue.

A periodical which professes to be a "register of flowering plants," like a similar publication devoted to the discussion of interesting literary topics, would, we conceive, be wanting in a great part of its office, were old objects of acknowledged value excluded from its pages, and novelties permitted to engross undivided attention. At any rate, we are careful to make our Magazine the vehicle of renewing the popularity of any partly discarded but useful subject, as much as of securing admiration for one that has never before been presented.

Of this class is the common, and perhaps we may add despised, plant displayed on the accompanying plate. The minuteness of its leaves, their tendency to exhibit a sickly, chaffy aspect, and especially the lengthened period through which it has been known to British floriculturists, have, to a surprising degree, operated against the size and fine combination of rich colours in its blossoms, to expel it from our gardens. It is, nevertheless, from the dimensions, richness, and favourite hue of its flowers, and on account of their being produced in the dull months of October, November, and December, a plant of no ordinary utility to the culturist who studies to render his greenhouse as alluring as possible at all seasons; and for this reason we willingly befriend it by appending a drawing which was prepared in the autumn of 1839, from specimens which flowered most profusely in His Grace the Duke of Devonshire's greenhouses at Chiswick.

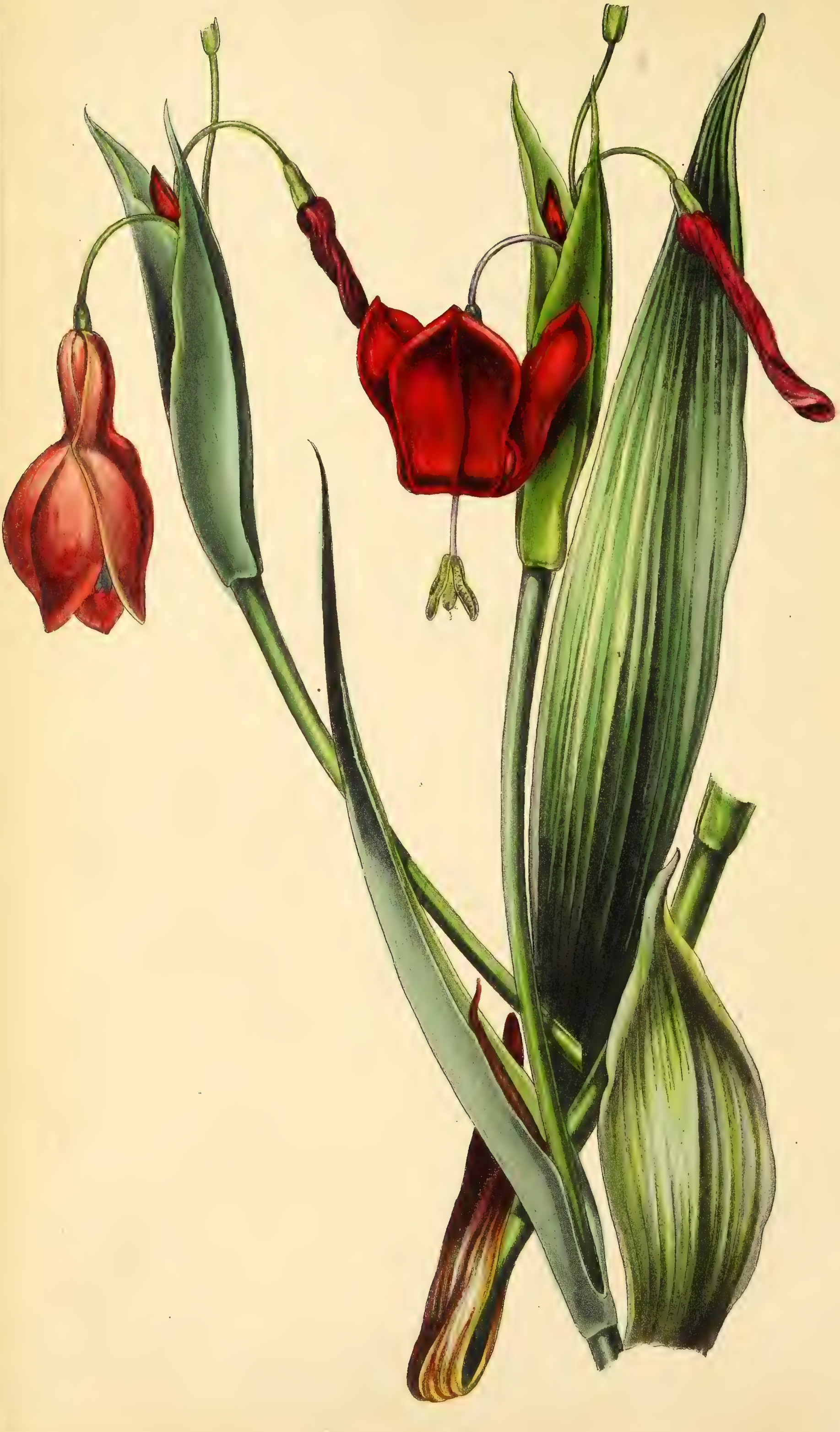
Persons who have only witnessed the straggling or starved plants of this species that generally bloom in nurseries, and, indeed, in most collections, are very inadequately qualified to form a proper opinion of its actual merits. When literally covered with its splendid blossoms, and otherwise in a compact and verdurous condition, it is as much removed from anything despicable, mean, or unengaging, as the most favoured tenant of our greenhouses, and quite as well calculated to excite, or even to command attachment.

It is not easy to arrive at a satisfactory solution of the question why it is so often met with in a disagreeably unhealthy or unprolific state. Several points in its ordinary treatment have struck us as being somewhat objectionable, the chief of which we shall now notice. Being a slender-rooted plant, of limited growth, short and by no means luxuriant branches, and small foliage, its capacity for imbibing, appropriating, and dispersing fluids, must unquestionably be circumscribed; consequently, it appears to require a soil with which sandy heath-mould is more freely blended. In fact, we should choose two-thirds of heath soil to one of light loam and sand as a suitable compost. Nor would the good effects of this be experienced, unless, at the same time, a very safe and effective drainage were secured. For, owing to its evergreen nature, and the perpetual necessity for the administration of water, it is essential to its health that the fluid supplies be readily and rapidly passed through the pot, and never be left to evaporate from its surface.

Too much water, in an earth which retains it beyond a very short period, and is rendered increasingly liable to saturation from a lack of sufficient drainage, is, therefore, according to our conviction, the great antidote to perfection in this plant. Other causes may, no doubt, unite with this; yet, we should certainly consider it the principal reason of failure. Where there is a marked disposition in the specimen to a very loose or scattered arrangement of its branches, there can be no question that the use of the knife, in reducing them almost down to the main stem, will be advantageous. The species has naturally scarcely any tendency to develop lateral shoots; and pruning ought to be sometimes practised to superinduce such a habit. It should not, however, be too unsparingly indulged, nor the branches decapitated lower than within an inch of the stem, since buds are not generally abundant at their base.

Cuttings taken off in the spring, and potted in sand, root rather tardily; on which account they may be subjected to a trifling bottom heat.

It is to be procured for an exceedingly moderate sum, of any London or country nurseryman; and should be in the possession of every cultivator who is desirous of growing only ornamental plants.



RIGIDÉLLA FLÁMMEA.

(FLAME-COLOURED STIFF-STALK.)

CLASS. MONADELPHIA.

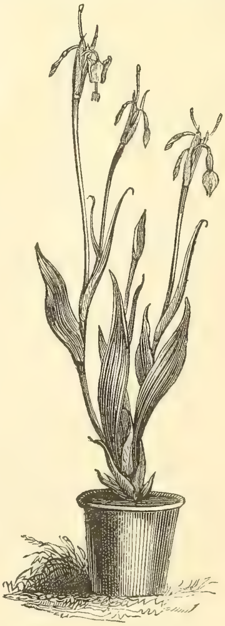
ORDER. TRIANDRIA.

NATURAL ORDER.

IRIDÀCEÆ.

Generic Character.—*Perianth* three-leaved; leaves imbricated at the base, convolute, bound together below the middle; limb concave, revolute, spirally twisted after expansion. *Stamens* three, joined together in an exserted tube. *Anthers* linear, erect, free. *Stigmas* three, bipartite, appendiculate at the back, opposite the anthers; lobes linear, papillose at the apex. *Capsule* papyraceous, apex three-valved, many-seeded. *Seeds* subglobose, dotted. *Raphe* and *chalaza* conspicuous.

Specific Character.—*Plant* perennial, having a corm-like bulb at its roots, growing about three feet high. *Leaves* equitant, plaited, sheathing, somewhat dilated at the base. *Flowers* fasciculate, flame-coloured, terminal, drooping, enclosed within a two-valved spathe, with a campanulate tube, and a reflexed limb. *Peduncles,* while the flowers are open, bent downwards; afterwards, when the fruit is ripening, perfectly erect.



This extraordinary and very showy plant, which constitutes a genus entirely different from any previously described, was discovered by Mr. Hartweg, an active collector in the employ of the Horticultural Society, during the earlier period of his tours in Mexico, and safely transmitted to that body, in whose gardens at Chiswick it flowered in 1839. From seeds received by Mr. Groom, nurseryman of Walworth, plants have since been raised; and after blooming specimens of these which were observed in the nursery of this gentleman in the autumn of the present year, the drawing now submitted has been prepared.

It is one of those remarkable floral objects which, while it arrests our admiration by the beauty of its blossoms, their vivid colour, and the prettily diversified hue of the anthers, demands more than usual scrutiny from the peculiarity of its structure, and the strange elasticity residing in its flower-stalks. The perianth, or coloured portion of the flower, is said to be destitute of a tube or petals, and curiously convolute at its base; its nerves contracting, and the whole rolling itself up in the manner of a screw after having been open a short time. The most noticeable feature, however, is the partially pendulous or bent nature of the peduncles during the period at which the flowers are in perfection, and their rapidly rising, when relieved from the compression of the decayed flower, to a purely perpendicular position, as seen in the figure.

To the individual who derives pleasure from watching the processes of Nature, there is much that will afford amusement in this captivating plant. The astonishing quickness with which its flowers are developed,—their progression being nearly visible to an attentive observer,—and the equally apparent rapidity which marks their decline, immediately on the occurrence of which they twist themselves in the way represented by the drawing, and after having fallen, allow the flower-stalk instantaneously to erect itself; deserve special and close examination. The weight of the blossom alone cannot be sufficient to occasion such a change in position; for the erectness is preserved while the seed-vessels are being matured, and the seeds must be as heavy as the withered flower. It is doubtless some beautiful contrivance for ensuring the due performance of a needful operation, which it would be worthy of the inquiring naturalist to ascertain and disclose.

So far as it has hitherto been cultivated, it appears to require similar treatment to that given to the old and magnificent *Tigridia pavonia*, to which it greatly assimilates in habit. It may be grown with the greatest ease in a pot of loamy soil, mixed with a little heath-mould and sand, taking up the bulbs when the leaves have decayed, and repotting them towards the month of November. A greenhouse or cold frame will be quite hot enough. Most likely it will be found, from experience, that a pit or frame in which it can be planted, and annually removed, with a sufficient protection from moisture and frost at certain seasons, will be altogether the most appropriate. And it is even probable that plants of it will succeed in the open border, if they can be slightly sheltered in autumn and winter. It is increased by offsets, which are not abundant, and the species is yet scarce. Seeds are reported to have been ripened in the Horticultural Society's gardens, by which it will soon be distributed.

Mr. Groom, who supposes his specimens to be of South American origin, has two varieties; one being marked in the inside of the flower with dark chocolate stripes, and the other having none of these markings. It blossoms in the month of June, producing a succession of flowers for several weeks, of which one is opened daily on each stem, about three, P.M., and remains perfect till seven in the same evening.

Rigidella is derived from *rigidus*, rigid; in reference to the stiffness of the peduncles when supporting the seed-vessels.

CONSIDERATIONS ON HEATH SOIL.

If any of our friends who possess the Magazine of Botany from its commencement, will refer to the 191st page of Vol. II., they will meet with a few remarks which we penned above five years ago, on the subject which we now propose to resume, believing it to be of greater moment to the gardener than at the first glance he might conceive to be.

We have one statement to correct; but the experience of years, has, in other respects, tended to confirm all that was cursorily alluded to in 1835. The error to which we refer is in the following lines:—"The sandy heath soil of Bagshot is of a greyish black tint; it contains a very great proportion of pure white sand, with, perhaps, scarcely one-tenth part of black decayed vegetable matter."

A variety of contingent circumstances, to which it would be useless to allude, have recently led to several more minute and exact analyses of that black soil of Bagshot; and besides this, a large portion of it came into our possession in 1837, which might be regarded as a more fair specimen of the soil which nurserymen obtain from Bagshot Heath, than was the first we obtained from a friend.

The proportion of sand to that of vegetable matter appears to be nearly as 20 to 4; therefore, any specimen which exists in the form of unctuous connected clods, may be presumed to contain five parts of sand by weight, to one of black earth destructible by fire: but if the sample be entirely powdery, without fibre, and incapable of any adhesion when wetted, it is bad and worthless when used alone, and consists of little else than white silicious sand.

We did not suspect that there existed as much difference in these moor-soils—in all of which heaths will and do grow wild—as in loams and the more common soils. But we have recently proved that those indefinite directions which are to be found in many periodicals on the application of peat, are calculated to mislead: for what one writer means to express by the term, may be altogether dissimilar from that which a reader may have at command.

Thus, a person who is constantly employed in propagation, and has thousands of plants under his care, on handling a sample from Bagshot, observed to us, that it was poor stuff, totally unlike the brown peat which was used near Epsom in Surrey. A specimen of that was obtained and analyzed: in colour, its finer vegetable portion was of a brown not unlike Scotch snuff, but of a deeper tint, and abounding with small flakes, like the broken tissue of very old fern-stalks. By the action of fire, twenty grains, when quite dry, lost thirteen grains, leaving seven grains of white sand. A second specimen, more black, and with many white visible particles, lost eight grains of twenty by fire; and a third, obtained from a nurseryman in Berkshire, differed little from the first cloddy specimen from Bagshot.

Thus, cultivators may be completely misled; and from what we have recently been told, we believe that they have met with perplexities which, in a great degree, have led to the substitution of leaf-mould, sand, and decayed turf, for almost all the plants in general cultivation, with the exception of the fine *Heaths*, *Epacris*, and a few other hair-rooted exotics.

In analyzing heath soils, we employ and recommend the following process; it is simple and interesting:—Collect the purest specimen of such as is generally found in the district; one which is always procurable, and not in any way peculiar: reject the roots and hard untractable fibres or pieces of wood. Break it up with the fingers, and dry it on paper laid upon a plate of hot iron. Weigh out accurately two parcels of twenty-five grains each: place one in a small crucible or open stone vessel, and set it carefully in the fire, so that no pieces of coal or other extraneous matter fall upon it; bring it to a bright red, and stir occasionally with an iron rod till the black particles disappear; then remove it; and when cool, ascertain the loss in grains. Put the second parcel of twenty-five grains into a small cup or glass, add about a teaspoonful of rain-water, and drop into the cup six drops of fuming nitrous acid, and two drops of concentrated sulphuric acid (oil of vitriol); stir with a strip of glass, and bring the vessel gradually to heat, till half the water, or more, pass away in steam: thus, the acids will be concentrated, and act energetically upon the free iron of the soil; the nitrous acid imparting oxygen to it, and thereby exalting the efficiency of the re-agent soon to be employed.

After twenty-four hours, pour a tablespoonful of water into the cup, stir the contents, and leave them to deposit the earth.

The *first parcel* tested by burning, will indicate the proportion of the sand left, to that of the vegetable matter consumed: to *that sand*, *add* the water and acids, apply heat, and treat them exactly as before directed for parcel 2.

In the mean time, dissolve ten grains of the salt called *prussiate of potassa* in half an ounce of rain-water; and if the solution be not bright, filter it through white blotting-paper. This is the re-agent; and the minutest particle of it will detect a solution of per-oxide of iron, however diluted, by instantly producing a tinge of Prussian blue. In making these solutions, all must be noted, so as to avoid confusion: and the clear fluids are to be poured into clean glasses, one to each; then more rain-water is to be added till the sand and earth be washed from any remains of acid flavour, the washings being poured into their proper glasses. Or each separate parcel may be passed to a paper filter, and washed on it till the drops fall free of acid.

By carefully collecting every grain of sand, and weighing the paper when dry before and after filtration, the loss by the action of the acids will be, perhaps, traceable; though we may safely assert, that in heath soil the quantity will be generally found exceedingly minute.

The test, being dropped into the clear fluids, will at once exhibit the presence of iron; of *that* no doubt will remain; but the point to be proved, as most interesting, is the following:—

The sand of No. I., that had been burned, will exhibit a greater volume of blue than will the solution obtained from the raw earth: that fluid, indeed, will be tinged; but the blue will separate from the first, and fall to the bottom of the glass. Still, the test should be applied by the strip of glass to the surface of each liquid till it effect no further change of tint.

Another process remains to complete the analysis, and solve the mystery arising from the circumstance just mentioned.—The *raw soil*, after the action of the acid and subsequent filtration, should be carefully dried and burnt as was No. 1; its loss of weight noted; and then be subjected a second time to the action of acid in *the same way as before*, omitting the nitrous, and doubling the quantity of oil of vitriol. Reduce the quantity by heat, and after twenty-four hours' standing in the vessel, add water, strain, and edulcorate as directed; then add the test drop by drop. A fresh and still more copious deposition of blue will be occasioned, affording proof undeniable and self-evident, that *iron* is *revealed*, if not formed by the action of fire on decaying vegetable matter. We now leave these facts, subject to the acumen of the enlightened reader, and to the criticism of the philosophic chemist.

SUCCULENT PLANTS.

(*Concluded from* p. 229.)

The last class of succulents whose cultivation we at present propose to discuss, comprehends the numerous species of *Aloe**, *Agave*, *Gasteria*, *Haworthia*, and their allies; with a portion of the genus *Euphorbia*, and the whole of *Echeveria*, *Mesembryanthemum*, *Crassula*, and the different divisions into which the latter genus has been separated. Our arrangement of the entire tribe into these distinct groups may seem arbitrary and unnatural; but it will be admitted that there is a dissimilarity in the habitude of each assemblage which entitles them to be considered apart from the rest. We thus have what may be called the *Mammillaria* class, the *Epiphyllum* class, and the class of which *Aloe* may be regarded as the type. And if *Euphorbiæ* are supposed not properly to belong to the latter, our reason for ranking them therewith is, that they are too often kept in a house of high temperature, where, in supplying them with the requisite moisture, the foundation of disease is laid. Perhaps, too, we might have more correctly reserved *Stapeliæ* for this article.

By far the greater part of the plants here brought together are from the same country, or the same kind of locality. The Cape of Good Hope gives birth to the majority of them, where they are always found in exposed places, and generally grow in a very sandy soil. The knowledge of these two facts is of great value to the culturist. From the first, he is made aware that no degree of light which in this country is ever afforded, even if unmodified by intermediate protective substances, can ever furnish more than half the quantum of this element they there receive; and through this he learns that everything which unnecessarily obstructs the passage of the solar rays to his charge, does them a positive injury.

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* Both these words, *Aloe* and *Agave*, are frequently pronounced as if there were no final *e*. The former, especially, is almost invariably so. To the botanic student or orthoepist, we need hardly say that such a mode of pronunciation is grossly inaccurate; as every botanical word that terminates in *e* is sounded as a distinct syllable.

But the inferences to be deduced from the other circumstance recorded are much more complex and remote, and therefore less likely to be detected by any but the most acute gardener. It is true that on the surface of it there is a hint that the soil employed for these sorts of succulents should be of a sandy nature: and of that we shall have something further to say hereafter. Still, it is usually forgotten that a sandy earth will not retain much moisture; that, in consequence of the peculiar intensity of light in those regions, acting on such a soil, the plants can never be really wet; and that, for a considerable proportion of the year, an actual dryness is maintained. Let these considerations be placed against the condition of *Aloes* and their congeners in our gardens, and the disparity will be strongly apparent.

If the compost used for these plants in Britain were exactly (or as nearly as possible) similar to that in which they naturally thrive, the inferior amount of solar agency exerted upon them, would render a more sparing administration of water, compared with that furnished by their native climate, desirable; but, in the existing methods of management, with a soil of which loam is the principal constituent, they are watered so profusely as very commonly to perish from too great dampness. Brick rubbish is certainly very generally incorporated with the loam and heath soil in which they are potted: yet nature and experience unitedly attest that such a material is not adapted for the purpose; for where a great degree of aridity is to be preserved, and the plants are not capable of enduring the extreme drought to which *Melocacti* may freely be subjected, the earth, unless it contain a large quantity of sand, which will admit the diffusion of water in a manner nearly analogous to blotting-paper, becomes hard and impervious, and the resources of the plant are so drained that its leaves turn flaccid, and positively wither, if not timely prevented by the renewal of the soil. Without dwelling longer on this point, which will again come beneath our notice, we may enforce the propriety of consulting the wants of these species with respect to light. And here the most strenuous observations that we have made on the utility of solar influence to the other tribes of succulents, may be more than reiterated. For though it might be reckoned superfluous to advance so much on a question which has been before insisted upon, light is even more essential to the species now under remark than to any kinds of *Cacti*, inasmuch as these last are nearly always favoured with an artificial temperature, which is, to some extent, equivalent to solar agency at particular periods of their growth. *Aloes*, on the other hand, requiring only the temperature of a greenhouse, need a greater natural stimulus to elaborate the nutriment with which they are provided, to prevent them from becoming too moist, and to fit them for existing in security through the winter, as well as for developing their inflorescence.

Seeing, then, the indispensability of an unusual amount of solar light, it will immediately be evident that the only way of meeting the demand is by constructing a house, the roof of which shall contain as much glass, and as little wood or other material, as is consistent with strength and durability. To effect this, the description of glass so extensively employed in the recent horticultural erections at Chatsworth, and which is in pieces or panes of about three feet in length, will be of admirable service; as not merely a greater stream of light is thus admitted, but the old evil of drippings from the laps of the glass can be entirely avoided. Such a preventive of one of the bad consequences resulting from the former methods of glazing, would necessarily be of enormous advantage to the plants here treated of; because they receive greater detriment from the casual falling of water on them in the winter, than from almost any other source; being of a nature so well calculated to retain it in their most susceptible parts.

To speak, next, of the temperature in which succulents of this habitude will flourish most satisfactorily, it is on this head, mainly, that we have detached them from the rest. The tropical kinds of *Cactaceæ* need, as we have shown, a somewhat high temperature during the summer months; and the *Epiphylla* likewise delight in a moderate heat, superior, at least, to that which can be obtained in a greenhouse. But for the present class, the ratio of heat which is generally bestowed on Cape Heaths is amply sufficient. This declaration is, we know, at variance with the common practice of cultivators, who imprudently arrange the whole of their succulents in one house, simply placing the hardiest species in the cooler positions, some of which are mostly to be found in structures that are heated by flues, and even in those through which hot water circulates.

Rather than so mix plants which have no real affinity except in their succulent nature, and expose one part of the collection to injury from the modification of temperature which is requisite for the accommodation of the remainder, and the other part to a like degree of harm from the same cause; where an adequate number is not kept to need two houses, we would have shelves placed along the fronts or other conspicuous portions of greenhouses, where the present group might be treated according to their character, and the Cactaceous sorts alone be retained in the succulent-house. Or if the *Cacti* were removed annually to hotbed frames, as we have recommended, there would then be no objection to the assemblage of all the succulents that are possessed in one structure; since this could be managed precisely as a greenhouse at the other periods of the year.

Wherever *Aloes* and the species of related genera are conserved, the heat of the house should range from the temperature of summer to that of winter, with the changes of the seasons; merely being just as much above that of the outer air in warm weather as is unavoidable from the existence of a glass covering, and always rather more than forty degrees Fahrenheit in the severest winter weather, that no frost may ever be able to operate upon them. The times at which fire-heat will be required are, of course, those at which frost prevails; and unless this is absolutely occurring, or pretty certain indications of its appearance are afforded, artificial heat would only be prejudicial.

On the soil most congenial to the subjects of this paper, it will now be expedient to offer a few remarks. The earth used by the major half of culturists has been already characterized as unsuitable, on account of its tendency to acquire an impervious degree of hardness when suffered to become more than moderately dry. It has further been stated, that sand is a far better constituent than brick rubbish or any similar substance, because, if well incorporated with the other materials, it will prevent their coherence into an indurated mass, and admit the constant percolation of any fluids that may be applied. The quality and quantity of sand which it is desirable to make use of have therefore yet to be mentioned.

Nurserymen and the higher classes of cultivators invariably incorporate with the soil for which an admixture of sand is essential, a white silvery substance, the particles of which are extremely minute, and which, when perfectly dry, will not adhere to each other, or to common earth. By blending this to a sufficient extent with any compost, it is kept continually open, porous, and permeable; and no amount of aridity will render it of that firm solid consistence which it would otherwise attain, and which equally opposes the circulation of water and the extension of the roots.

Two of the principal objects to be gained in potting succulents are, first, a soil that, however dry it may once become, or however long it may be retained in that state, will, on the ultimate application of water, readily permit its diffusion throughout the whole body; and secondly, one that will never offer resistance to the finest rootlets, nor, if left till it is very arid, and then removed for the purpose of shifting the specimen, will so attach itself to the roots, or conglomerate into large balls, as to render the operation of disengaging the former difficult and dangerous. It has been previously asserted that none of these plants are very bountifully provided with roots; and hence, whatever cuts off their supply of nutriment, or helps to damage or break them, is especially to be deprecated.

Connecting the circumstances last described with the properties above assigned to sand, there will no longer be any hesitation in the mind of the gardener concerning its adoption as an invaluable ingredient in his compost. Reduced brick-rubbish is by no means of a like nature, being itself, in a great measure, incapable of keeping the earth duly open, and totally unfit for obviating its cohesion, owing to the impossibility of making it fine enough to spread it thoroughly through the mass. There is a substance, however, which is a finer kind of what is commonly called river-sand, and consists of exceedingly small pebbles, which, if easily procurable, is even more useful than silver sand. Its value is attributable to the increased porosity it imparts to the soil with which it is mixed, and the consequently rapid dispersion of fluids it occasions. It follows that this should have the preference where it can be obtained.

Of the proportion in which sand ought to be blended with the earth for the hardier succulents, a very general direction must suffice; for there will ever be a discretionary variation, dependent on the health of the specimens, and the peculiar habits of the genus or species. With one third of light loam, or the surface soil of upland commons and meadows, which contains a trifling portion of sand, and is tolerably friable, having lain in the compost-yard for one or two years, and been sufficiently turned over to decompose all the vegetable remains it may comprise, we would mix another third of sandy heath-soil full of decaying fibre, and make up the remaining part with sand. Regarding the loam, we may point to the importance of being well acquainted with its nature before selection; and where no opportunity has been allowed for this, we would advise that the turf be taken off a small plot of the ground from which it is to be procured, and the effects of the weather on the piece thus bared closely noted. By this simple test, we have sometimes found that a loam which appeared, at first sight, of the most promising description, and of so loose a texture as to be pulverable with the greatest facility between the fingers, has, in a wet season, and when suddenly dried after a heavy shower of rain, attained such a closeness of consistence and hardness of surface, as not to be easily pierced with a strong wooden instrument; while the surrounding land, notwithstanding its identity of character, was, by being covered with herbage, as soft and penetrable as could be wished. No doubt can be entertained that the earth in question was of a clayey kind, but its true texture was not detectable till the turf had been removed. The relation of these observations is not intended to apply to choice of a soil for succulents alone, but for the general guidance of the gardener.

In watering the species of *Aloe*, and all those succulents which have leaves diverging in a half-erect position from a common centre near the ground, the greatest caution is to be observed in the colder months, and, indeed, during the entire year, with the exception of the hottest and growing season. Being so formed as to permit water to lodge in the axils of their leaves, or in the centre of the plants among the younger and more tender foliage, the fluid supplied should not be poured over the plant, but directly on the soil, or on the margin of the pot. In the summer months, as before mentioned, such a precaution may be disregarded, and the specimens will be benefited by watering over the leaves, as well as by the occasional and sparing use of the syringe.

There is still a point connected with the administration of water to all succulents, —and, we might very properly add, to every sort of exotic grown in pots, did our dissertation include these,—which is too momentous to be passed over silently. We refer to the mode of its application as it respects the employment or rejection of a rose to the watering-pot. In some collections, it is customary to adopt a comprehensive system of watering in order to save labour; and to throw fluid most copiously through a rose over the whole of the plants to be supplied. In the summer, too, when a large amount of water is essential, it is furnished in that manner till a pool of it is left standing in each pot. Now, without taking into account the number of specimens that thus receive more water than they need,—the mischief caused by which can hardly be over-estimated,—a calamity of an equally serious character is entailed.

Whoever has noticed the results of an excessively heavy fall of rain upon a piece of land, the superficial soil of which has been reduced by raking, and afterwards rendered compact by the action of a light roller, will be prepared to witness the same consequences from heavy watering with a rose. Nor are they at all likely to be disappointed: for when a brisk wind or hot sun succeeds, by which the earth is speedily dried, the particles composing its surface being comminuted through the force of the rain, are formed into a hard crust which must crack and be broken up before it will again let moisture pass through it with facility.

It is precisely thus, but to an enlarged extent, with the soil in pots. If watered by the heavy falling of large drops of fluid from the rose of a watering-pot, in such quick succession as to create a puddle, the subsequent influence of the sun, when it has its ordinary summer power, will literally *bake* it into a solid incrustation, through the fissures in and around which liquid can alone reach the roots of the plant. That this hardened earth is particularly injurious to succulents, since they have to be supplied very sparingly with water at certain periods, and that water is expected to pass to all their roots, when, in such a condition, it could at the uttermost merely reach the exterior ones, needs not to be more than hinted; and the absolute necessity of applying water through the spout of a vessel placed close to the soil, or resting on the edge of the pot, will be strikingly obvious.

The time for potting the *Aloe* class of succulents, is about the end of April or the beginning of May. They will then commence growing at once, and, for the most part, bloom towards the decline of summer or in early autumn; after which the lights of the house in which they are growing may be taken off in the day (save when the weather is damp or rainy) for a month or six weeks, and finally closed for the winter at the commencement of October, or sooner or later as the season may dictate. For the smaller species of the first four genera indicated in this paper, it will be politic to pluck off the flower-spike of those whose inflorescence is insignificant, and which are interesting solely for the shape, colour, or disposition of their foliage, that the plant may not be exhausted to no purpose.

Echeverias and *Crassulas*, the first comprising species which are natives of Mexico, but of such high districts as to thrive very well in our greenhouses, and the last including the genera *Rochea*, *Kalosanthes*, &c., flower usually in the late summer season, and can be appropriately managed in the way herein detailed. *Mesembryanthema* have recently had an entire essay devoted to them in this Magazine. If desired to be kept in the house, no directions for treatment can be more applicable than the foregoing; and whether they are cultivated as greenhouse plants, or annually turned into the open borders, or grown continuously on exposed rockwork, the secret of having them, and the species of the genera *Calandrinia* and *Portulaca*, which are somewhat related in habit, in the greatest perfection, is to propagate them annually or biennially, and destroy the old stock.

RUDIMENTS OF THE NATURAL SYSTEM OF BOTANY.

NO. VI.

In taking another and final view of the elements which constitute the distinguishing features of the Natural Orders, we are not without fear of having detained our readers too long on these preliminary matters, which, in the absence of any reference to plants that might illustrate them, must inevitably be more or less tedious. Although wanting, however, in intrinsic interest, it will be sufficient for the inquirer who has taken the trouble to peruse them, to know that the details into which we have entered, will render essential assistance when the Orders are individually laid open, and the objects of attraction they contain patiently elicited.

Besides the characters of the stigmas before commented on, an additional and striking one exists, which is found in very few Orders. It is perceptible as a distinct membranous covering or case, entirely enveloping the organ, and bearing the name of indusium. The readers of Mr. Main's work on Vegetable Physiology will be in no danger of confounding what he has called the indusium with the appendage here described; the membrane there intended being much more generally, in short, almost universally present, as the rudimentary layer between the annual deposition of wood and bark in Dicotyledonous plants, and which eventually forms the new alburnum and liber, or, still more remotely, the woody and cortical accretion. Some value is also attached to the position of the stigma, as to whether it be capitate (*i. e.* growing on the summit,) or on the side of the style.

In the incipient stages of the seed's growth, and before it becomes invested with a conspicuous integument, it is so far considered distinct as to have the term ovule assigned it. It is important to regard the ovule apart from the seed in the study of the Natural System, because the former often possesses very prominent characters, which disappear, or are liable to deceive the examiner, when the organ is in a more advanced state. Several Orders are essentially characterized by having an indefinite number of ovules; and others are quite as peculiar for having the number of them definitive. The situation of the ovules is, however, according to Dr. Lindley, "one of the most valuable forms of structure that can be taken into account." They are either attached to the interior base of the ovary or pericarp, and in that case are said to be erect; or they hang from the top of the same member, and are then described as suspended. Two varieties of these dispositions occur, in which, on the one hand, the ovules are connected with the bottom of the ovary by a small process or stalk, when they are distinguished as ascending; and on the other hand, if a similar protuberance is the seat of those depending from the summit, they are termed pendulous. Little use is made of these trifling deviations.

As in almost every other instance, there are some striking departures from the rule which represents the ovules of certain Orders as growing in one direction, Examples have been given in which the three positions of upright, pendulous, and horizontal, or parallel with the placenta, are discernible in as many species of the same genus. Yet these do not destroy the validity of the character in other Orders. They only demonstrate the necessity for embracing every point of distinction, and not depending on isolated marks.

Every ovule, whatever be its shape, will, when attentively examined, be found to have a small aperture on some part of its surface. Botanists designate this little cavity the foramen; and the course it takes outwards, or the direction in which the orifice points, is looked upon as the line in which the future radicle or first root will protrude itself. The latter test is of great moment to the scrutinising observer; for there are Orders which derive much of their distinctiveness from having the radicle directed in a contrary course to that usually taken. In general, the radicle points to the hilum or umbilicus, which is the little stalk that attaches the ovules to the pericarp or its placentæ.

When the ovarium is fully ripened, it assumes the name of fruit. The shape and texture of this organ are exceedingly diversified, and give rise to many designatory appellations. A fruit is always composed of two separate parts, which are known as the pericarp and the seed. With the first of these alone we have now to deal. The pericarp is commonly divided into the epicarp, or the exterior rind or shell, which is popularly recognized as the husk of Horse or Spanish Chestnuts, &c.; the sarcocarp, or fleshy portion, as the edible part of the apple, plum, or peach; and the endocarp, or interior coat or shell, which may be illustrated by the stones of cherries, &c. It frequently happens that one or two of the above are not to be discovered; and it has been long believed that some fruits have no pericarpial covering, but are simply naked seeds. The plants belonging to the second Order of the fourteenth Class in Linnæus's arrangement, and the Order *Labiatæ* of the Natural System, have thus been deemed to have their individual seeds exposed. Later botanists have proved this to be a complete fallacy, resulting from imperfect investigation; each of the little seeds in *Labiatæ* having a manifest pericarp, independently of the seminal integument. Truly naked seeds are, nevertheless, observable in a few Orders, and are considered very remarkable.

The divisions of the pericarp, like those of the ovary, are of first-rate importance to the student. Having formerly remarked on these, we shall only further notice that when the pericarp is separated externally into a number of lesser cases or cavities, each bearing a separate style and stigma, and containing one or more seeds, such minor vessels are denominated carpels. On the dehiscence or indehiscence of the pericarp, or its power or incapacity for splitting when mature, and either ejecting the seeds or suffering them to drop out, very serviceable distinctions are likewise founded.

Analogous to the ripened ovary being called the fruit, is the designation of seed, which is applied to the ovule after it has reached its natural size. The hints that have been thrown out with regard to the position of the ovules, hold good in reference to the seeds; no subsequent development ever disturbing their radical situation. Beyond that, however, the variations in their cuticle, technically termed the testa, are ofttimes noted with advantage. Their texture, too, is occasionally rendered subservient to the purpose of description; and where they take any singular shape, such as that currently called winged, in which the sides of the testa are dilated and flattened, this is rarely disregarded.

A minute scrutiny into the internal structure of most seeds—in the larger ones by the naked eye, and the smaller sorts with the aid of an adequate magnifying power—will exhibit one or more cotyledons, the existence or non-existence of albumen, and the embryo of future vegetation. The cotyledons, or those comparatively large and thick plates of nutrimental matter which support the plant in its infant state, and are familiar to gardeners by the appellation of seed-leaves after germination has begun, are among the most valuable indications of affinity on an extensive scale. Although monocotyledons are, however, generally thought to be defined by the possession of one cotyledon, a much better mode of distinguishing them is by the position of their seed-lobes. In monocotyledonous plants, where there is more than one cotyledon, (which is not commonly the case,) they are arranged alternately; and in dicotyledons they are uniformly opposite each other.

Albumen, when present, is a nutritive substance, of various degrees of hardness, immediately surrounding the embryo, and always to be known from the cotyledons, by being separable from them, and having a connexion with the more directly vegetative organs. There are Orders in which, from its great dimensions, it forms an excellent feature for recognition; but in some it is so imperceptible as to present no available difference. Its texture, which is diversified from soft and succulent to hard and horny in different Orders, must often be carefully noticed.

Situated ordinarily at one end of the seed, and projecting itself therefrom when subjected to proper stimulants, the little embryo may be easily detected. It contains the rudiments of the young plant, which, on their primary development, extrude themselves in certain directions, these being peculiar in many Orders. The part that is afterwards to form the stem (or, in stemless plants, the leaves and axis) is the plumule; while the little rootlet, which is alike the basis of subsequent subterraneous enlargements, receives the title of radicle.

Having been largely indebted to the luminous explication of Dr. Lindley throughout the present series, we cannot finish it better than in the inferences he draws, that "No one can be at a loss to understand that to define any group of plants, of what rank soever, is impracticable; that differences of structure are of uncertain and unequal value; and that the affinities of plants are never to be absolutely made out by *solitary characters*, but depend upon more or less intricate combinations, the power of judging of which is the same test of a skilful botanist, as an appreciation of symptoms is that of a physician."

FLORICULTURAL NOTICES.

NEW AND RARE PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR NOVEMBER.

Barringtònia racemòsa. Of this most noble plant, a specimen bloomed in the stove of Charles Horsfall, Esq., Liverpool, in September 1839. It was imported from Bombay when only a foot high, and in three years' time had grown to the height of eight feet, with a perfectly simple stem. At this period it began to branch, and simultaneously developed a drooping raceme of flowers, twenty-eight inches long. The blossoms are neither large nor very showy, and would have little interest but for the great quantity of stamens, which have crimson filaments, and yellow anthers. The leaves are particularly fine, being obovately lanceolate, and about fifteen inches long and five broad. If it should hereafter produce a raceme of flowers from each branch, and continue ramifying, it will unquestionably make a splendid feature in the stove. *Bot. Mag.* 3831.

Calectàsia cyànea. Few of the plants of South-western Australia can at all be compared with this delightful species for the beauty of the blossoms. Mr. Brown first discovered it between Cape Lewin and Bass' Straits; and it has lately been received at Glasgow from King George's Sound, collected by Mr. Baxter, and from other persons. It forms a low branching shrub, not much unlike a *Dracophyllum* in its habit and foliage, and bearing a profusion of light purple flowers, which have a bunch of conspicuous orange stamens in the centre. It is a very valuable little greenhouse plant, not only for the rich hues of its blossoms, but because " the form and colour of both leaves and flowers is truly of that kind called *everlasting*." Sir W. J. Hooker expresses a hope, in which we warmly concur, that amongst the numerous importations now made from the Swan River colony and other Australian districts, this lovely plant may be freely imported, and afterwards abundantly cultivated. *Bot. Mag.* 3834.

Delphínium decòrum. Mr. Cameron, curator of the Birmingham Botanic Garden, raised this pretty species from seeds communicated by Dr. Fischer of St. Petersburgh, and flowered it in June last. Its native country is New California, near the Russian settlement at Port Bodega. According to the figure, both the sepals and spur of the flowers are covered externally with prominent hairs; and the interior segment is also still more hairy. " In the specimens sent from Birmingham, the leaves were uniformly three-lobed, with the intermediate division ovate or oblong, acute and undivided; while the lateral divisions, placed at right angles to it, were often two-lobed, and sometimes divided into several secondary segments in the posterior lobe." It is in the foliage that the chief distinction rests; the flowers being at first of a bluish violet, and subsequently violet purple. *Bot. Reg.* 64.

Monachánthus Bushnàni.* Nearly related to *M. discolor*, and originally deemed a variety of that species by Sir W. J. Hooker, who, in giving it its present name, doubts the propriety of ranking it as a distinct species. Its principal claim to that title is that the central lobe of the labellum of its flowers is very acute and quite destitute of fringe; while in *M. discolor*, and its true varieties, the same portion is obtuse and more or less fimbriated. The blossoms are yellowish green; the interior of the lip, and the fringes to its lateral lobes, being of a deep golden brown colour. The Glasgow Botanic Garden contains plants of this species, which were presented to Mr. Murray in 1838, and flowered in November 1839. *Bot. Mag.* 3832.

Pernèyttia angustifòlia. An elegant little Arbutus-like shrub, said to be derived from Valdivia, and communicated to Dr. Lindley from Mr. Cameron, of the Birmingham Botanic Garden, and Mr. Low, Clapton. It is a hardy evergreen, of dwarf habits, and having small, narrow, serrated foliage, with a considerable number of pretty white flowers. Although called *P. phillyreifolia* in the gardens, it is removed from that species by the pedicels being "quite destitute of scales at their sides, unless at the very base;" and several less marked features. The species, like many American plants of the same nature, is very liable to be destroyed by excessive heat in the summer; and, either in pots or in the open border, it should be partially sheltered from the more direct of the sun's rays, and planted in heath soil. It is propagated from seeds, which "may be sown any time from March to August, in a close frame, but should never have any artificial heat after the plants are potted off." *Bot. Reg.* 63.

NEW, RARE, OR INTERESTING PLANTS IN FLOWER IN THE PRINCIPAL SUBURBAN NURSERIES.

Borònia — ? A neat little species of *Boronia*, obtained from seeds which formed part of an importation from the Swan River Colony, collected by Mr. Drummond, is flowering with Mr. Low, of Clapton. The leaves are undivided, long, and narrow, the plant very dwarf and bushy, and the blossoms, which are rather diminutive, pale pink. These are somewhat profuse, but the species will not stand in competition with some of the older kinds.

Epidéndrum floribúndum. One of the caulescent class of Epidendra, with much stronger stems than those of the most attenuated sorts, but not so luxuriant as a few of the more vigorous species. Its flowers are somewhat ornate, and very numerously produced on a terminal loose paniculated raceme. They have narrow green sepals, and petals of a like hue, yet so small as to be but just discernible. The lip is prominent, white, and prettily spotted with purple. It has latterly bloomed at Messrs. Loddiges', and with Mrs. Lawrence, Ealing Park, and constitutes a very lively feature in the collection.

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* In our October Magazine, while noticing *Monachanthus longifolius*, it is said to have flowered in the garden of T. Brocklehurst, Esq., "the Fence, Manchester;" whereas the residence of that gentleman is near *Macclesfield*, in Cheshire.

FÙCHSIA CORYMBIFLÒRA. Mr. John Standish, nurseryman of Bagshot, Surrey, has succeeded in blossoming this superb *Fuchsia*, which is much superior to *F. fulgens* in the colour of its flowers, and the liberal manner in which they are borne. The tube of the flower is also a little longer; its hue being a bright crimson, while that of the petals (which are likewise larger) is a rich scarlet. Our artist has executed an excellent figure, from a plant at present flowering in the above nursery, and this will be published on an early occasion.

GARDÒQUIA BETONICOÌDES. This handsome Mexican plant was introduced about two years since, and flowered so scantily in the greenhouse, as to give little promise of ornament. Specimens planted, this year, in the open border of Messrs. Young, Epsom, have, however, displayed an uncommon share of beauty; their showy pinkish purple blossoms being much larger and more dense than is ever the case when they are beneath a sheltering roof. For an autumnal-blooming half-hardy herbaceous plant, it will prove a very useful accession to our gardens; and the roots can be taken up, separated, and potted, in the month of October, to be kept in frames during the winter, along with similar species of *Salvia*. It remains in bloom for many months, and preserves its beauty till injured by frost.

ONCÍDIUM DELTOÍDEUM. The flowers of this pretty *Oncidium* are of an exceedingly attractive kind, owing to their peculiarly vivid tints. These are dark brown and pale yellow, which are far from being novel, but they at once strike the eye as more than usually pleasing; and this effect is increased by the graceful form of their exterior parts. The lip is, however, the most distinct characteristic. Its shape is that of a depressed triangle, (hence the specific name,) and it curves under in such a way as not to be observed on a rapid glance. The colour is almost uniformly brown. The species is of the pseudo-bulbous division, having nothing striking in either its pseudo-bulbs or leaves. It has been in flower with Messrs. Loddiges for nearly two months, and is still in fine perfection.

STYLÍDIUM SAXIFRAGOÌDES. Seeds of this little plant were sent by Mr. Drummond from the Swan River Colony to Mr. Low, Clapton, where, having vegetated, the plants from them are now unfolding their blossoms. In its leaves, which are all radical, and disposed in concentric rows, each less than the one beneath it, round a common axis, it is especially delightful; these being so regularly arranged, and having a glaucous appearance, with a small curvature, resembling a hook, at the extremities. The flowers are either white or yellow, there being apparently one or two varieties.

OPERATIONS FOR DECEMBER.

NOVEMBER having opened with more than its accustomed dampness, and much rain having fallen during the first fortnight, the saturated earth will have furnished an excellent index of the extent of draining which will be requisite this season, and which may at once be effected. For all spots in which tender plants, or any sorts of exotics that are of dubious hardihood, are cultivated throughout the whole year, no precautionary measure is of greater moment than an efficient provision for the conveyance to a proper distance of the water that might accumulate in the soil.

It is rather a curious subject for investigation, and does not redound to the credit of the floriculturist for industry and zeal, that numerous expedients resorted to by the cultivator of fruit trees for the realization of his wishes are sadly undervalued or neglected when flowering plants are the objects of attention. An instance in point presents itself from the preceding paragraph. No experienced gardener attempts to cultivate peach trees, or other choice fruits that require the protection of a wall, without seeing that the border containing them is adequately drained, either by Nature or by some artificial contrivance. How seldom the same care is bestowed on the ground prepared for blooming shrubs, it would be needless to mention. We wish, however, to see these more beautiful productions regarded as tenderly as the fruits that conduce to the luxuries of the table; and unless draining be more attended to in the pleasure-grounds and flower-plots where valuable exotics are planted, it is perfectly plain that the success in acclimatation must be extremely partial. And now that the earth has been drenched to a degree that will render those species unsafe from which the excessive moisture is not immediately carried away, a good opportunity is afforded for extending the process to every portion of ground that may stand in need of such assistance.

This being the period at which gardeners are wont to rake the fallen and decaying leaves out of their shrubberies and shrubbery borders, prior to digging the whole or a portion of them, we cannot avoid expressing our decided reprehension of the practice. In the natural woods and forests of our country, or even those which have been created by art, the defoliation of the trees, and the decomposition of their leaves, are the means by which they manure themselves, and ameliorate, or, in peculiar cases, actually form the soil from which their roots afterwards derive nourishment. Why flowering shrubs and trees, and the more lofty ornaments of our pleasure-gardens, should be deprived of this beneficial source of sustenance, particularly when they are desired to assume a more ornate and healthy appearance than the rougher components of forest scenery, and very often grow in an earth which really requires some such application both to enrich and pulverize it, we are quite unable to imagine. Our advice, therefore, to all would be to bury those leaves that lie on the borders which do not contain a great quantity of herbaceous plants; or, in other words, to dig them in when the soil is turned over, and to allow the others gradually to rot, and their remains to be washed into the earth by the agency of rain.

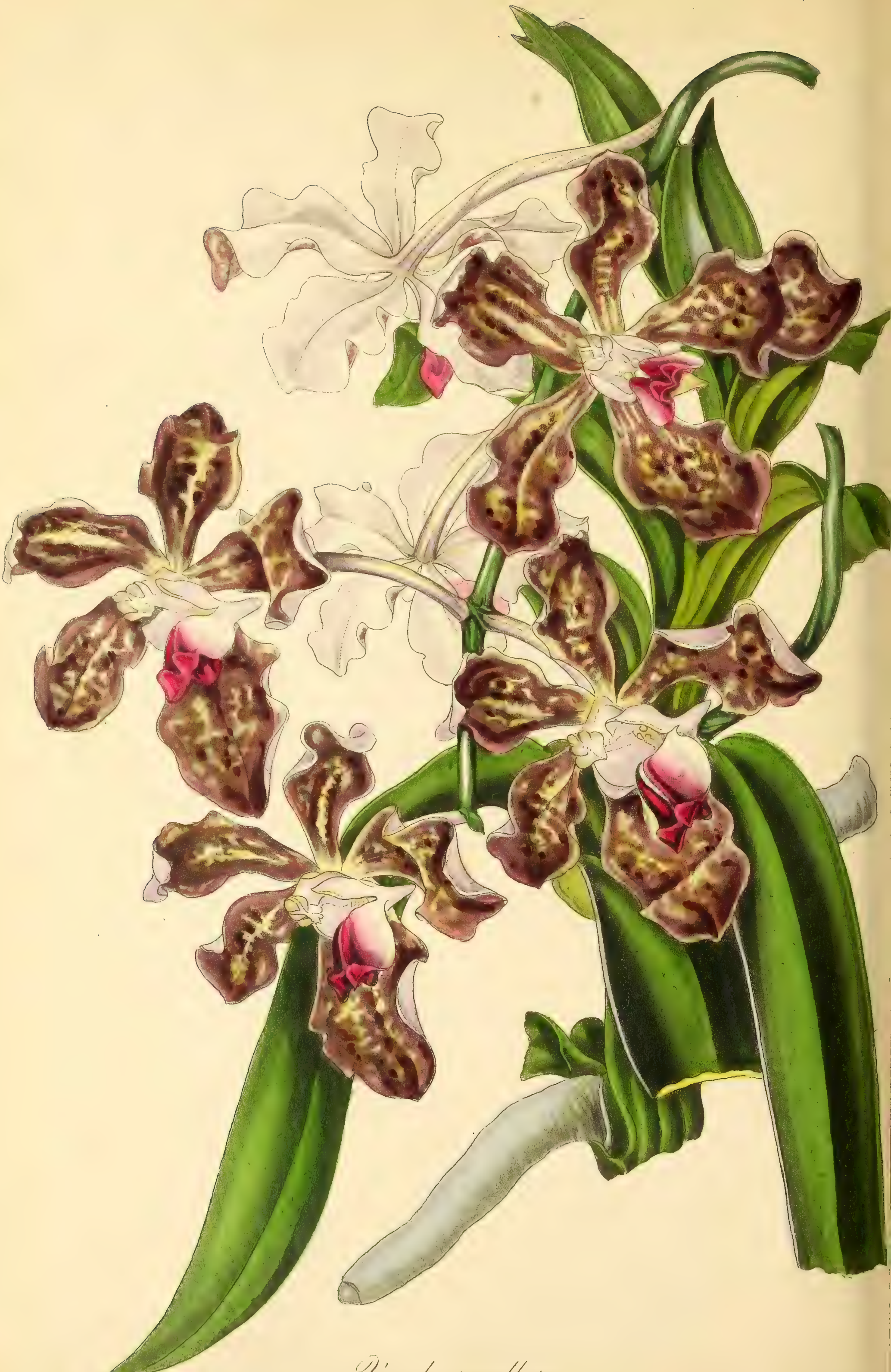
To persons who possess very valuable Tulip beds, and employ a canvas covering to shelter them in rigorous weather, we would recommend the addition of a coating of pitch or tar over the canvas, that it may be made available on wet as well as frosty occasions. The same suggestion applies to the covering of any other beds of tender plants, which, from a particular cause, it is desirable to retain in the open border. By warding off an undue supply of moisture, less protection from frost will be requisite, and the plants, if necessarily kept, at an after period, for a considerable time beneath a dark screen, will not be so liable to become blanched, and otherwise suffer from their confinement.

Plants in houses are at this time almost universally torpid, and the efforts of the culturist have simply to be directed to their maintenance in that state. The few that are now unfolding their flowers (unless it be some peculiar sorts of Orchidaceæ) are by no means exceptions to the remark; since the production of inflorescence is a kind of consequence of the completion of their growth, and not an indication that it is still progressing. The chief condition to be desiderated is one on which we have repeatedly dwelt, and to which we cannot too frequently advert in the cold season. It is a safe proportion of aridity in the atmosphere and about the roots; the latter usually producing the former, or at least invariably tending thereto.

Chrysanthemums will have now nearly ceased flowering in the greenhouse; and when their blossoms have faded, they should have their stems cut down, and the plants removed to a cold frame. Exposure to the air, by leaving off the lights of the frame in mild days, will be of great service to them; and all the other management they demand is to be kept thoroughly dormant, and beyond the influence of frost.

Some species of *Lælia*, and other Orchidaceæ that flower at the present period, ought to be retained in a warm but not a moist house while the blooms are expanded, and then gradually transferred to a much colder one. They endure naturally a considerable degree of cold; but it is not advisable to subject them to a lower temperature than 40° Fahrenheit in this country; only taking care that the house or frame appropriated to them and all resting Orchidaceæ shall be duly divested of atmospheric moisture.

Forcing should be vigorously conducted this month. And as a quiescent state is recommended for vegetation that is ordinarily treated, so, just the reverse of this becomes necessary where an artificial excitation is sought. The air of the forcing-pit must, consequently, be in a constantly moist condition; and this will best be maintained by the use of fermenting manure, instead of a fire apparatus.



Vanda tessellata.

VÁNDA TESSELLÀTA.

(TESSELLATED-FLOWERED VANDA.)

CLASS.	ORDER.
GYNANDRIA.	MONANDRIA.

NATURAL ORDER.

ORCHIDÀCEÆ.

GENERIC CHARACTER.—*Perianth* showy, spreading. *Petals* and *sepals* nearly equal. *Labellum* having a pouch or inversely conical spur, with the base continuous to the column, partially three-lobed; middle lobe fleshy. *Column* thick, free, shortened, with an obtuse beak. *Anthers* two-celled. *Pollen-masses* two, obliquely two-lobed, with a linear caudicula, and a nearly round gland.

SPECIFIC CHARACTER.—*Plant* epiphytal, caulescent. *Leaves* distichous, coriaceous, obliquely three-toothed at the point, linear, and recurved. *Racemes* erect, longer than the leaves, bearing from six to twelve blossoms. *Flowers* large and very showy. *Sepals* and *petals* oblong-obovate, undulated, obtuse, of a light lilac colour, marbled with brown. *Labellum* with the middle lobe ovate, emarginate, pale pinkish lilac, becoming purple towards the extremity.

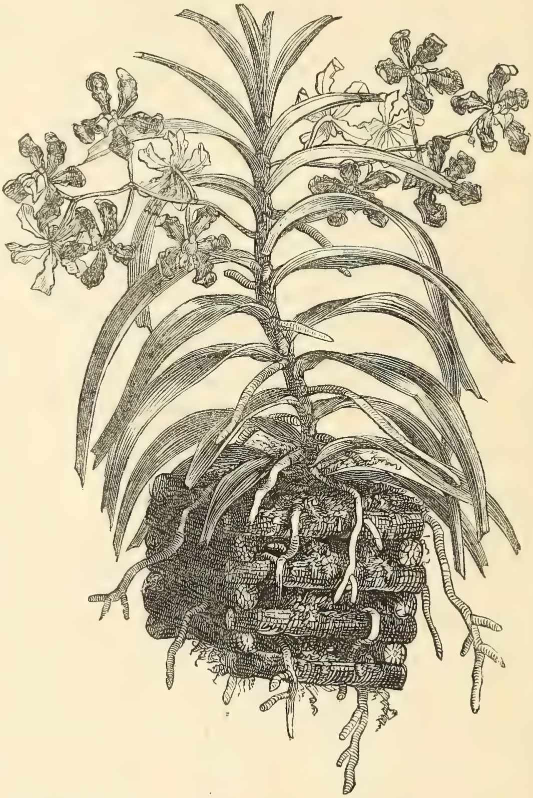
SYNONYMES :—*Vanda Roxburghii, Cymbidium tesselloides.*

THERE is a group of Orchidaceæ which develop themselves in the form of stems, and not of pseudo-bulbs, whose increase is effected with such difficulty, or at intervals so distant, as to render their diffusion the work of an age, and even a still longer period. Their production of flowers is, at the same time, so generally restricted to large or old specimens, that when they are really and strikingly beautiful, their value is scarcely ever felt, because it is but rarely exhibited.

Vanda tessellata, the admirable plant of which a figure is now given, constitutes a prominent object in the above class. It has been cultivated at least thirty years in British stoves, and was among the species which first called forth the skill of our cultivators; but it is not even at this day common in collections, and its noble flowers are seldom witnessed.

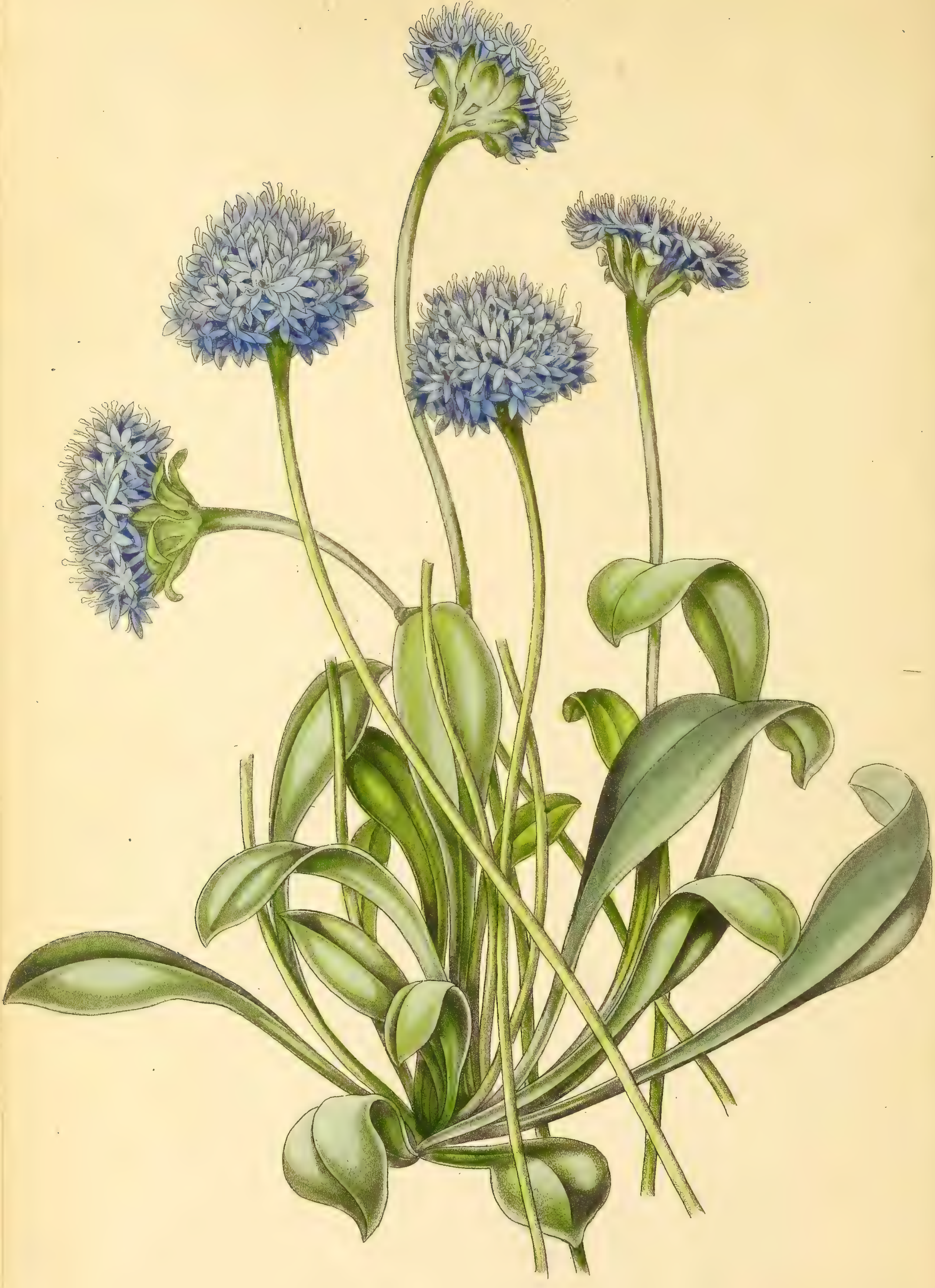
In Messrs. Loddiges' extensive establishment, we have often been gratified with the fine plants of this species and its variety which have there bloomed in such profusion and perfection. From these gentlemen, too, we have adopted the name of *V. tessellata*, though it is indifferently called by this appellation or *V. Roxburghii*, as we consider the former more expressive of its character. The richly checkered blossoms are not, however, always of the colours represented in our plate. There is a variety at Messrs. Loddiges', and doubtless in other gardens, with a mixture of light brown and a greenish hue in its sepals and petals, and a lip of which the tint inclines to a bluish purple. Both are very vigorous-growing plants, with large, thick, and fleshy roots, dense and deep green foliage, and a natural tendency, according to Dr. Roxburgh, to decay at the base of the stem when they reach the height of two or three feet, thus never advancing beyond that point.

For our present drawing we have to thank S. Rucker, Esq. of Wandsworth, Surrey, in whose select and rich collection it blossomed in the summer of 1840. It can be cultivated in a rough wooden basket, or one formed of thin strips of pliable wood, with numerous openings at the sides and bottom; or, again, may be attached to a large block of wood, with furrowed and durable bark. In either position, it should derive most of its nourishment from the atmosphere, and not be planted in heath-soil or any earthy compost. Moss, pieces of decayed wood, or any half-decomposed woody vegetable matter, will be serviceable around the roots, where baskets are employed; and a little moss may be used if a simple log be chosen.



The stimulation by high temperature and free supplies of moisture afforded to its allies in the summer season, will be essential to the plant under remark. Being a strict Epiphyte, its liquid support should, however, be rather drawn from a moist atmosphere than from more direct applications. In the winter, a partial drying will be beneficial, and cause it to produce sooner and more abundantly its lovely flowers. But this must not be carried to too great an extent, on account of its luxuriant nature.

It is a native of China and India, flourishing in most parts of Bengal, and attaching itself chiefly to the tree which bears the Mango. The subjoined engraving will show more clearly its usual habit.



Brunonia Australis.

BRUNÒNIA AUSTRÀLIS.

(SOUTHERN BRUNONIA.)

CLASS.
PENTANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
BRUNONIÀCEÆ.

Generic Character.—*Head of flowers* surrounded by an involucre. *Calyx* five-parted, with four bracts. *Corolla* monopetalous, funnel-shaped; *limb* five-parted, two superior lobes more deeply divided. *Stamens* five, hypogynous. *Anthers* connate. *Ovary* one-seeded. *Stigma* with a two-valved indusium. *Utricle* included in the more hardened tube of the calyx, spreading out on the top of the plumose lobes. *Seed* without albumen.

Specific Character.—*Plant* perennial, herbaceous. *Leaves* radical, somewhat spatulate, acute, villous on both sides with short spreading hairs. *Flower-stem* roundish, about a foot high, crowned with a solitary head of flowers. *Calyx* with longitudinally plumose lobes. *Flowers* bright blue.

The genus *Brunonia* was established by Sir J. E. Smith in honour of Robert Brown, Esq., D.C.L. &c., the illustrious investigator of botanical affinities, and justly pronounced by Dr. Lindley "the most learned systematic botanist of this or any other age." It gives the name to a very small order in the Natural System, and has both apparently and actually a close relation to the Scabious tribe. No new species have been added to it since it was founded; and it remains an isolated but worthy indication of the object for which its name was applied.

Although introduced in 1834, and in all respects a most interesting little plant, it is not yet known in the majority of places;—an inference which we feel authorised to make from its not being ordinarily cultivated. The extreme neatness and prettiness of its habits, the simple beauty as well as vivid blue colour of its blossoms, their liberal production, and the ease with which the species is grown, all present claims on the culturist's attention; and those who, from their united influence, determine to procure, and to treat it with common care, will not regret either its cost, or the trifling trouble it requires.

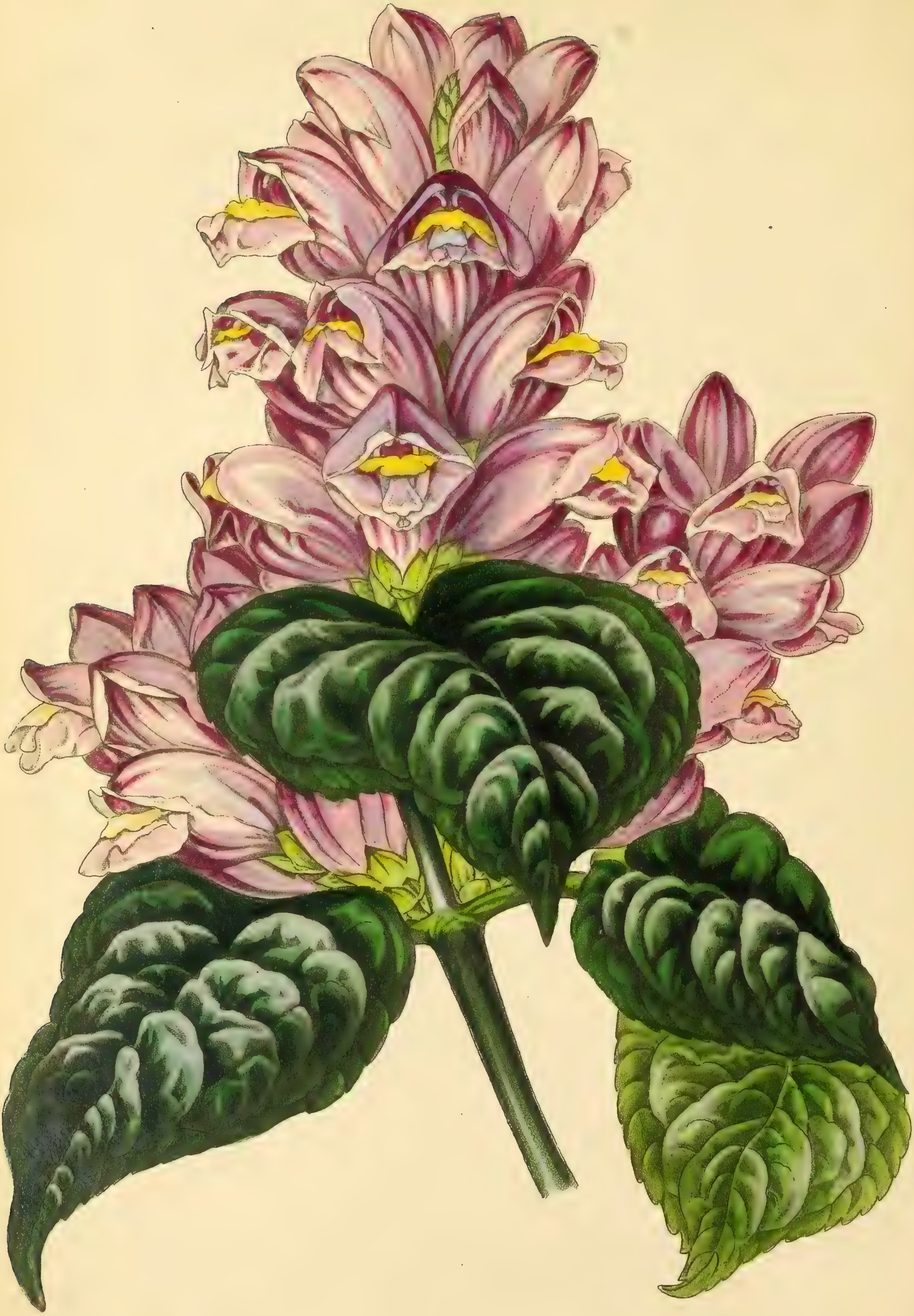
While walking through Mr. Low's nursery, of Clapton, in the month of July last, our interest in this pleasing plant was warmly excited by some specimens that were then flowering in the greenhouse. It bears a strong resemblance to the

Jasione montana of our commons and other uncultivated tracts; but its foliage is superior, its heads of flowers much larger, their fragrance most agreeable, and their tint of that lovely azurean kind which is so unusually met with in purity, and which seems such a brilliant reflection of the skies beneath which it is displayed. We then thought that our subscribers would be glad to become better acquainted with it by a figure, which was accordingly prepared, and is herewith published.

The species inhabits different parts of Australia, and was imported from New Holland. Probably it would form an appropriate summer ornament to a conspicuous compartment in the flower-garden, removing it to a frame or greenhouse in the earlier months of the autumn. We have not, however, seen this plan tried; and since the plant makes a particularly valuable feature in a greenhouse,—which, owing to the number of species that are turned out into the open air at the season when our subject blossoms, is never overstocked with blooming specimens,—we should recommend that it be kept constantly in pots, save where a sufficient quantity is possessed to allow of a portion being devoted to the purposes of experiment.

Potted in a light sandy loam, mixed with a small portion of heath-soil and white sand, it may be managed very safely in the same way as other greenhouse herbaceous perennials; merely watering it freely in the summer, and administering fluid more scantily during winter.

Propagation is performed by dividing the plant in the spring, at the time of potting, into as many pieces as may be desired, or as the size of the specimen will admit, placing each in a separate pot, of moderate dimensions, and shifting them into a somewhat more spacious one when the first is thoroughly filled with roots.



Chelone Lionii.

CHELÒNE LYÒNII.

(MR. LYON'S CHELONE.)

CLASS.
DIDYNAMIA.

ORDER.
ANGIOSPERMIA.

NATURAL ORDER.
SCROPHULARIÀCEÆ.

Generic Character.—*Vide* p. 149 of the present volume.

Specific Character.—*Plant* an herbaceous perennial. *Stems* erect, from eighteen inches to two feet high, slightly branched. *Leaves* petiolate, cordately-ovate, acuminate, serrated, wrinkled on the surface. *Spikes* terminal, with smaller lateral clusters of blossoms. *Flowers* large, purplish pink.

Synonyme.—*Chelone major.*

Similar reasons to those which we assigned for supplying a figure of *Chelone obliqua* at p. 149 of this volume, strengthened by the still greater showiness of the species now brought forward, have induced us to admit the accompanying plate. Like the plant just mentioned, *C. Lyonii* has no novelty to render it attractive, nor is it a species which persons of the most circumscribed gardens may not readily obtain and preserve. If handsomeness and real merit, however, can commend any floral object to the regard of the inspector, it assuredly has enough of these to establish it as a decided and permanent favourite.

So superior is it in the size of its flowers to any other *Chelone*, that it has been appropriately designated *C. major* by some authors; and the copiousness in which these are borne, the existence of smaller clusters at the base of the central spike, the breadth and beauty of the foliage, and the somewhat dwarfer character of the whole plant, confirm and vindicate any preference we have manifested. Its distinctness from *C. obliqua*, however much a glance at the form and colour of their flowers when growing near each other might deceive the unobservant into a supposition of identity, will be perfectly obvious from an examination of the two figures.

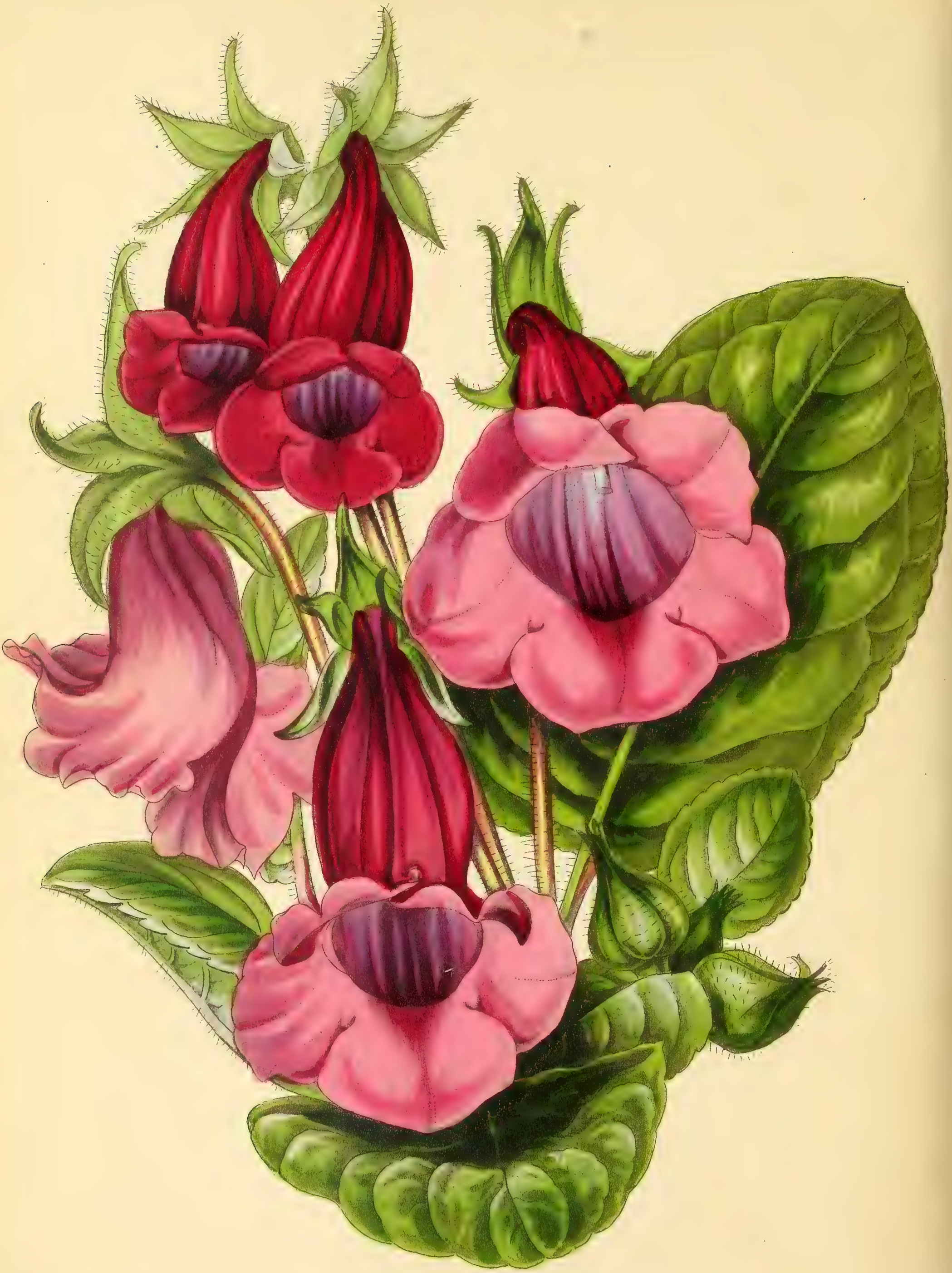
For the general cultivator, it will be sufficient to say, that *C. obliqua* has weaker stems, with a greater distance between the joints,—much narrower leaves, of a different figure, and very considerably longer,—more lengthened and simple spikes, and rather less flowers, of a darker hue, and more expansive at the mouth.

The purposes to which the two species may be applied are exactly the same, and the modes in which they are to be treated quite in unison. They will be highly useful to those who grow herbaceous plants extensively, and may be freely mingled with the various members of that class, whether in borders or beds. But their chief value, and that to which we would especially point, is their suitability for planting along the skirts of shrubberies, and in such situations as are much shaded by either shrubs or trees during the greater part of the summer's day. We observed exceedingly vigorous specimens in several gardens last summer, where it appeared almost impossible that the direct light of the sun should ever reach them. They were, nevertheless, flowering in fully as prolific a manner as plants of the same species in more open plots.

As there are not many really handsome hardy herbaceous plants which are fitted for thriving in the positions above alluded to, and as it is particularly desirable that these should be well known and duly esteemed, we record the foregoing as an interesting fact, and one which has not been without its influence in inciting us to bring these figures before our readers.

C. Lyonii was first known in Britain about the year 1812, having been brought from Carolina and Georgia in North America. Its blooming period is the months of July, August, and September, and its flowers continue open for a great length of time. It is increased by separating the plant in the spring, when the borders are turned over, and will be benefited by a transference to another spot and soil once in every two years.

Our drawing was prepared from some beautiful specimens which bloomed in the borders of Messrs. Henderson, Pine-Apple Place, in August last. It is in the possession of most nurserymen who cultivate hardy plants of this sort.



Gloxinia rubra.

GLOXÍNIA RUBRA.

(RED-FLOWERED GLOXINIA.)

CLASS. DIDYNAMIA. ORDER. ANGIOSPERMIA.

NATURAL ORDER. GESNERIÀCEÆ.

Generic Character.—*Vide* vol. v. p. 219.

Specific Character.—*Plant* an herbaceous perennial, with a tendency to become caulescent. *Stems*, when developed, roundish, succulent, from two to four inches high, of a reddish-purple hue. *Leaves* radical, or on the tops of the stems, with petioles of two or three inches in length, oblong, acute, crenated and revolute at the margins, hairy on both sides, deep green above, pale or whitish green beneath. *Peduncles* three or four inches high, hairy. *Calyx* of five ovate, acuminate, hairy, spreading segments. *Corolla* reddish crimson, much darker at the orifice of the throat, and having a tinge of blue towards the bottom of it.

Several years ago, more than one nurseryman with whom we have had opportunities of conversing, have, at various times, imagined that they had succeeded in securing plants of a red-flowered *Gloxinia*; but in every instance the expectation has proved futile, till Messrs. Young, of Epsom, in the spring of 1840, imported tubers of the splendid species which we have here the satisfaction of figuring. Its history, as related to us by the principal of that firm, is comprised in the following brief particulars.

The whole of the stock was purchased by these gentlemen of Mr. Buist, of Philadelphia, by whom it is stated to have been procured from Rio Janeiro a few years back. Having arrived at their nursery, and been kept in a moist stove ever since, it began to exhibit its blossoms in the month of September last, from which time to the present the original specimens, and those which have been raised from them by propagation, have not ceased to present a succession of the most brilliant flowers.

When the blossoms first expand they are of a deep rich blood-red colour, which is very efficiently imitated in our drawing, the throat being of a far darker tint, with a slight shade of brown. After having been opened for some time, they assume a paler hue, of which crimson is the chief constituent, and at the lower part of the throat a tinge of blue becomes perceptible, the upper portion still preserving its comparatively intenser shade.

Whatever opinions may be entertained regarding its origin, or its claims to be considered a species,—and on each of these subjects we deem the accounts received, as well as the very remarkable and beautiful singularity of its character, sufficiently clear,—that it has opened up quite a new field for the hybridist, has furnished an invaluable plant for the cultivator, and is eminently worthy of a place in every garden establishment, none will dispute. And having been retained so long in a stove, and blossomed so late in the year, it is most likely that, under more congenial and less stimulative treatment in another season, the colour of its flowers will even be heightened and improved.

Regarding its culture, it is presumed that the management of other *Gloxinias* will be equally suitable to this. By what has hitherto been made apparent, it would seem, however, to be an evergreen species, and not to lose its leaves and fall into a state of thorough torpidity in the winter. Still, its constant verdure and the persistence of its foliage, may be entirely owing to the excitement to which it has been subjected, and not attributable to natural causes. Most probably it will be found to need drying in the winter, and require to have its leafless tubers kept in dry earth in a position secured from dampness, till the commencement of spring. During the summer, it demands an abundant administration of water, and will succeed best in the neighbourhood of fermenting bark, from which both heat and moisture are emitted.

It is propagated with readiness by planting the leaves in sand or sandy soil, and placing the pots containing them in a humid temperature. The leaves, likewise, if carefully fastened flatly on moist sand, and shaded from solar influence, will sometimes protrude roots, and form young plants from many parts of the midrib, and thus a more extensive multiplication can be ensured.

With the exception of some plants which Mr. Low of Clapton informs us that he possesses,—but on which, not having yet flowered, we can offer no opinion,—Messrs. Young have the sole stock of this superb *Gloxinia*. We would invite the attention of all lovers of novelties to a species which is as unique and ornamental as any plant that has been added to our collections for a considerable period.

OPERATIONS FOR JANUARY.

SEVERE frosts are now usually experienced, and very commonly cold strong winds from the east or north, or the points between these two quarters. The influence of the former is apparent to all, and means are invariably adopted to check it when necessary; but the destructive agency of winds is not so universally perceived.

Evergreens, from the verdure of their foliage, and the readiness with which the loss of vitality is detected by the change in their colour, present the best facilities for examining the effects of wintry blasts. And it will be obvious, on investigation, that they are much more frequently injured from this class of agents than by the intensest frost. Hence, first, the importance of strewing dry litter or fern-leaves over dwarf Rhododendrons and other evergreen shrubs during the occurrence of such winds as those of the middle of the last December; and secondly, the necessity for sheltering all tender plants more thoroughly at these periods. Let the fact herein asserted once be thoroughly known, and it will be impossible for cultivators to treat so slightingly as they do the operation of winds, both on plants growing in the open ground, and those in houses; for they abstract heat through the glass, and diminish it by insinuating themselves into the crevices caused by the laps in glazing, to an incredible extent.

Garden-mats should be had in extensive requisition at this time for covering frames and other plant-structures. Their employment, or that of some similar *external* protection, cannot be too much or too often insisted upon. They exclude cold far more certainly than fire-heat, besides being very considerably less expensive, less injurious to plants, and requiring less labour in their application. It must not, however, be assumed that fires will be entirely superseded by that system. They will always be useful, indeed essential, on special occasions, but need not be so regularly or so largely brought into operation.

In forcing flowering shrubs or bulbous plants at this season, leaves that have been collected from the woods or parks will form an excellent substitute for bark or manure; since the heat they create is very genial, and free from all noxious exhalations. The ease with which they may be obtained renders them of especial value where economy is sought. The pots containing the plants may be plunged in them; and the same materials, mixed with a little stable manure, will serve to place around the frame or pit for maintaining the requisite heat.

Water, under any form, is to be kept as far as practicable out of plant-houses, as it admits the more rapid dispersion of heat. For this reason, cisterns in them that are ordinarily left open and full should at once be closed or emptied, and no fluid be administered to any plant that is not almost withering for want of it.

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